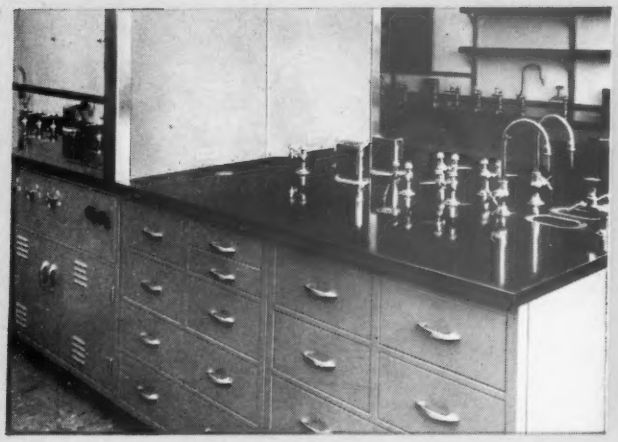
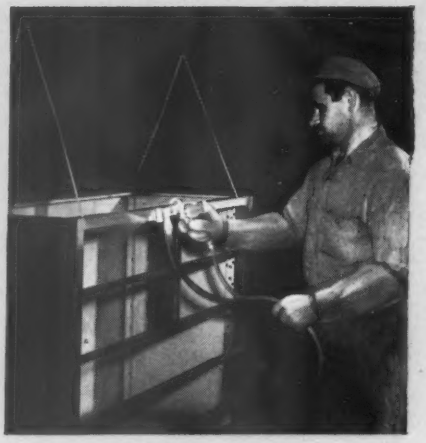
PAINT and VARNISH Production

THE TECHNICAL MAGAZINE FOR MANUFACTURERS OF PAINT, VARNISH, LACQUER AND OTHER SYNTHETIC FINISHE

NOVEMBER 1956

EPON® RESIN does it!





Laboratory furniture sprayed with Epon resin finish supplied by Glidden Co., Cleveland, and Egyptian Lacquer Mfg. Co., South Kearny, N. J., and Lafayette, Ind.

Browne-Morse Co. found a tough, chemical-resistant coating for laboratory furniture...

HERE'S HOW...

LABORATORY FURNITURE leads a rough life. It requires a coating that withstands hard knocks and chemical attack.

To find such a coating Browne-Morse of Muskegon, Michigan, tested various formulations by applying them to steel panels, which were then exposed to corrosive laboratory chemicals. Performance was evaluated by the time required for any break-through, softening, or change in color or appearance.

Only those coating formulations based on Epon resin passed these tough tests satisfactorily. They combined excellent chemical resistance with outstanding adhesion to steel and aluminum. The Epon resin coatings resisted scuffing and impact and didn't crack or spall—even when severely dented. Epon resin coatings are now standard for all Browne-Morse laboratory furniture.

Are you aware of the advantages of Epon resin? Do you want excellent adhesion, resistance to abrasion and impact, ability to withstand extremes of heat, humidity, and the attack of corrosive chemicals? Ask your Shell Chemical representative to explain how Epon resin can improve your paint and enamel formulations. *Write for "Epon Resins for Surface Coatings" and "Epon Resin Esters for Surface Coatings."*

SHELL CHEMICAL CORPORATION

CHEMICAL SALES DIVISION, 380 Madison Avenue, New York 17, New York

Atlanta • Boston • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • New York • San Francisco • St. Louis

IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited • Montreal • Toronto • Vancouver

SHELL

Now from RCI:

WALLPOL 9120

a PVAc copolymer emulsion with better balance

● RCI now offers you a *brand new* copolymer emulsion which incorporates the latest advances in PVAc emulsion technology. Through a uniquely balanced emulsifier system this new PVAc product, WALLPOL 9120, combines two outstanding properties. They are:

1. **Excellent stability** — and that means both thermal stability and package stability. You'll also find that, compared to competitive copolymer products, WALLPOL 9120 causes less bodying during pigmentation.

2. **Excellent water resistance**—obtained in this new RCI copolymer emulsion by *small particle size* and the exceptional balance of other physical properties. You won't find *any* competitive copolymer that is better balanced to permit both high pigment loading and good performance.

Besides unusual stability and water resistance, performance qualities of WALLPOL 9120 include *exceptional tenacity and toughness* (achieved via its high molecular weight) and *superior elasticity, elongation* and *flexibility*.

Why not see what you can do with this new RCI copolymer emulsion in *your* PVAc formulations? Discover what product stability and what tough, flexible, water-resistant films you can secure with WALLPOL 9120.

Where your formulas call for a homopolymer emulsion, try WALLPOL 9301, a Reichhold PVAc that's easy to work with and offers high performance properties. WALLPOL 9301 is widely accepted for durable exterior masonry paints, interior flats and primer sealers.

An RCI technical service man will be glad to talk over any PVAc problems you may have. Or, if you wish, just write for full information on the new copolymer emulsion, WALLPOL 9120. Ask for *Technical Bulletin SC-18*.

Creative Chemistry . . .
Your Partner in Progress

RCI

REICHHOLD

Synthetic Resins • Chemical Colors • Industrial Adhesives • Plasticizers
Phenol • Formaldehyde • Glycerine • Phthalic Anhydride • Maleic Anhydride
Sodium Sulfite • Pentaerythritol • Pentachlorophenol • Sulfuric Acid

REICHHOLD CHEMICALS, INC., RCI BUILDING, WHITE PLAINS, N. Y.

PAINT and VARNISH Production

(REG. U.S. PATENT OFFICE)

Formerly PAINT and VARNISH PRODUCTION MANAGER
(Established in 1910 as The Paint and Varnish Record)

VOL. 46 NOVEMBER, 1956 NO. 12

NEXT ISSUE

The use of liquified petroleum gas fork trucks in material handling operations will be featured in the December issue. Advantages and other important aspects as applied to specific handling problems will be discussed in this feature.

A complete report on the 68th National Association Convention in Los Angeles will also be covered in this issue.

Published Monthly by
Powell Magazines, Inc.
Executive and Editorial Offices
855 Ave. of Americas
New York 1, N. Y.
BRyant 9-0499

JOHN POWELL, *Publisher*

ANTHONY ERRICO, *Editor*

A. L. BENDER
Production Manager

WM. R. KELLY
Circulation Manager

PHILIP J. SEAVEY
Advertising Manager
ALAN P. DANFORTH
855 Ave. of Americas
New York 1, N.Y.
BRyant 9-0499

DUNCAN P. MACPHERSON
700 S. Washington Sq.
Philadelphia, Pa.
LOmbard 3-9982

Advertising Representatives
McDONALD-THOMPSON
West Coast Representatives

FEATURES

DEPARTMENTS

MEMBER BUSINESS BPA PUBLICATIONS AUDIT, INC.

PAINT and VARNISH PRODUCTION is published monthly except semi-monthly in February at Easton, Pa. by Powell Magazines, Inc. John Powell, president; Ira P. MacNair, vice-president and treasurer; Alice L. Lynch, secretary. Entered as second class matter at Post Office at Easton, Pa., Jan. 30th, 1952, under the Act of March 3, 1879. Subscription rates: United States and Possessions, $3.00 a year, $5.00 for two years, $10.00 for five years. Single copies 50c each. Canada, $4.00 a year. Pan American Countries, $4.00 a year. All other countries $8.00. Editorial and business office: 855 Avenue of the Americas, New York 1, N. Y. BR-9-0499

CARBIDE
AND CARBON
CHEMICALS

Carbide and Carbon Chemicals Company
A Division of
Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.

NIACET vinyl acetate monomer

Trade-Mark

A large, new unit is now on stream at Texas City, Texas. This unit more than doubles existing capacity there and substantially increases national production of vinyl acetate monomer.

With this increased availability, you can count on CARBIDE to continue to meet your growing needs for vinyl acetate monomer. And you can rely on NIACET vinyl acetate monomer because it is produced by the pioneer and leader in vinyl monomers.

In Canada: Carbide Chemicals Company, Division of Union Carbide Canada Limited, Montreal.

The term "Niacet" is a registered trade-mark of Union Carbide and Carbon Corporation.

Editorial Comment

November, 1956

Big Business and Small Business

SMALL business is as necessary to the nations' economy as is big business, according to a recent survey disclosed by the Du Pont Company.

This survey points out that during the past decade small business showed a vigorous growth. Since the end of World War II, more than 1.2 million firms with fewer than 100 employees have been established, and small business employment has increased 45 percent, from 11.6 million in 1945 to nearly 17 million today. It was also revealed that small companies number more than nine-tenths of the Du Pont's 75,000 customers and 30,000 suppliers.

These facts clearly indicate that the great majority of America's business firms are small and that they are among the best customers and reliable suppliers of big business.

Our economy can support a healthy small business element along with the big companies because of the complementary relationship the two enjoy, the Du Pont Company said. Contrary to popular belief, the bigs and littles do not compete directly for the same business. The bigs do the jobs for which they are best equipped —volume production, large scale research and development. Only companies with large resources can participate in those fields requiring heavy investment in development and productive facilities. The small companies, on the other hand, excel in processing, converting and distributing the products of big business.

The survey cited many examples of the opportunities that Du Pont's products have opened up for small business. Among these have been the mass production of cellophane, nylon yarn and nylon plastic, finishes based on tetrafluoroethylene and neoprene, refrigerants for aerosol products, and many others.

Undoubtedly the success of the various product applications cited has been due, in large measure, to the extensive research and development work carried on in the Du Pont laboratories. The "know-how" obtained, in many instances, was passed on to customers, free of charge with Du Pont benefitting because it sells these basic products to the small firm.

In 1955, more new corporations were formed in any year in American history. About 90 percent employed less than 20 people. This certainly signifies that small business continues to hold an important place in our economy.

Trade Sales Surge Ahead

IN glancing over recent statistics on paint sales issued by the Bureau of Census, one becomes aware of the significant gains that Trade Sales are making this year. The eight-month total for this category amounted to $656,611,000. For the month of August, Trade Sales totalled $90,422,000, the highest August on record.

With construction activity playing a dominant role in the overall picture of Trade Sales items, we can expect brisk activity in this particular field during the months ahead.

According to Dodge reports, the first nine months cumulative totals by the major construction categories show the following trend: non residential at $6,977,670,000, up 9 percent; residential at $8,094,637,000, up 2 percent; and heavy engineering at $4,368,759,000, up 15 percent. The general opinion amongst many of our leading economists is that this current level of construction activity is expected to continue throughout most of 1957.

At your call...

2-ethylhexyl alcohol

2-ethylisohexyl alcohol

Tecsol ®
proprietary ethyl alcohol
95% and anhydrous

n-butyl acetate

isobutyl acetate

ethyl acetate

isobutyl alcohol

isopropyl acetate

acetone

Eastman
solvents

Eastman
CHEMICAL PRODUCTS, INC.

KINGSPORT, TENNESSEE
subsidiary of EASTMAN KODAK COMPANY

Most Eastman solvents are stored in bulk in the major industrial centers of the United States. Write for information or call your Eastman representative.

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tenn.; New York City; Framingham, Mass.; Cincinnati; Cleveland; Chicago; Houston; St. Louis. **West Coast: Wilson Meyer Co.,** San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.

Koppers announces

NEW PAINT LATEX

DYLEX* K-34

fortified for improved pigment binding

. . . improved freeze-thaw stability!

NEW DYLEX K-34 PAINT LATEX is a styrene-butadiene latex *fortified* with an additional ingredient added during polymerization. The result is a superior latex of extremely fine particle size.

Fortified DYLEX K-34 has better pigment binding strength than conventional styrene-butadiene latices. That means better freeze-thaw stability, stronger adhesion to a variety of surfaces, improved stain removal, and excellent scrub resistance. Storage stability and color development also have been improved in DYLEX K-34.

DYLEX K-34 Paint Latex has good mechanical stability. Paints of high solids content can be formulated with it easily by conventional methods, on existing equipment. It can be combined with present styrene-butadiene latices, long oil alkyds, and proteinaceous or cellulosic water-soluble resins if desired.

THOROUGHLY TESTED

THIS NEW DYLEX K-34 Paint Latex has been tested and approved in a variety of paint formulations.

You can use its advantages. Send the coupon for more complete technical information, and a sample for testing in your paint.

**Koppers Trademark*

FREE SAMPLE

Koppers Company, Inc.
Chemical Division, Dept. PVP-116
Pittsburgh 19, Pennsylvania

☐ Please send me your Technical Bulletin #C-6-238T which contains specific information on the performance of your new DYLEX K-34 Fortified Paint Latex.

☐ Also, please send free sample of this improved latex.

Name .....

Firm .....

Address .....

City ..... State .....

KOPPERS

KOPPERS CHEMICALS

Sales Offices: PITTSBURGH • NEW YORK • BOSTON • PHILADELPHIA • ATLANTA • HOUSTON • CHICAGO • DETROIT
LOS ANGELES • SAN FRANCISCO In Canada: Dominion Anilines and Chemicals Ltd., Toronto, Ontario

YOUR DOLLAR

- Outstanding scrub resistance
- Excellent adhesion
- Good brushing and leveling
- Minimum viscosity drift
- Low angular sheen
- Good freeze stability

Satisfies every requirement of TTP-29

Here's the answer to your quality-sales situation . . . two ready-to-roll paints—in white, pastel and deep-tone!

- Outstanding brushing and leveling
- Excellent covering
- Low sheen
- Good contrast

can do still more...

in new interior Latex paint formulations* using GEN-FLO® 67

Four new basic formulations for latex paint—one to fit every situation encountered in paint sales—have been developed by General Tire's Chemical Division. Besides providing high quality interior latex paint at low cost, these formulations will help you stretch fast-shrinking raw material dollars. For samples and more information on these sales-increasing, profit-making formulations, write to:

THE GENERAL TIRE & RUBBER COMPANY

Chemical Division • Akron, Ohio

Chemical Division
GENERAL
THE GENERAL TIRE & RUBBER CO.
GEN-FLO

Creating Progress Through Chemistry

*Based on lcl raw material costs

Get the latest information on these formulations . . .

Clip and Mail this coupon today

THE GENERAL TIRE & RUBBER COMPANY
Chemical Division • Akron, Ohio

I am interested in further information on new latex paint formulations using Gen-Flo 67.

Name _____ Address _____

Title _____ City _____

Company _____ State _____

COMPARE THE CLARITY!

THINNER FORMULATIONS	A	B	C	D	E	F	G	H	I	J
Butyl Acetate	40	35	25	15	10	—	—	—	—	—
Methyl Isobutyl Ketone	—	—	—	—	—	40	35	25	15	10
CS 601	—	5	15	25	30	—	5	15	25	30
Isopropyl Alcohol	15	15	15	15	15	15	15	15	15	15
Toluol	25	25	25	25	25	25	25	25	25	25
Lactol Spirits	20	20	20	20	20	20	20	20	20	20

NOTE: The data above were developed by tumbling the nitrocellulose solution for a period of 25 weeks in jars containing steel balls.

CELANESE SOLVENT 601

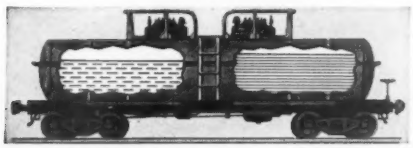
INHIBITS COLOR BUILD-UP IN NITROCELLULOSE LACQUERS

It is normal to find discoloration in lacquer solutions after contact with steel or iron surfaces. But Celanese Solvent 601 can help to prevent this condition. Tests show that the addition of economical Celanese Solvent 601, in amounts varying from 5-15% by weight of thinner, is effective in reducing lacquer discoloration due to metal corrosion . . . in many cases can eliminate the need for lined drums or tanks.

Celanese Solvent 601 is a high quality, blended solvent that is offered to meet the requirements of both vinyl and nitrocellulose formulations. In solvent power, evaporation rate and other properties Celanese Solvent 601 closely resembles methyl ethyl ketone—*although much more economical!* Ask your Celanese representative about the many advantages of Celanese Solvent 601. Write for special literature:

Celanese Corporation of America, Chemical Division, Dept. 558-K 180 Madison Avenue, New York 16, N. Y. Canadian affiliate: Canadian Chemical Co., Limited, Montreal, Toronto and Vancouver.

Celanese®



GET THE ECONOMY OF SPLIT SHIPMENTS

Fill all your solvent needs with Celanese compartmented tank delivery, and enjoy the advantage of bulk prices! Available from terminal points in Newark, Chicago, Bishop, Texas.

Laboratory technicians of Rohm & Haas Company are shown sampling a three-year-old batch of Rhoplex AC-33 *acrylic* emulsion. After three years' outdoor storage and much freight handling, this emulsion showed no significant deterioration.

3 years of outdoor storage and

RHOPLEX AC-33 acrylic emulsion is still stable

In three years of continuous outdoor storage, summer heat and winter cold have had little effect upon the stability of this commercial batch of RHOPLEX® AC-33 *acrylic* emulsion. No measurable coagulation has occurred, and the pH of the emulsion has dropped from 9.3 to only 8.9.

Further tests also showed that paints based on this emulsion have properties equivalent to those of paints based on freshly-prepared emulsion — properties which include scrub resistance, good adhesion, color retention, and fast drying.

You get these properties—and stability—when you base your paints on RHOPLEX AC-33 *acrylic* emulsion. Write for a sample and detailed information.

Chemicals for Industry

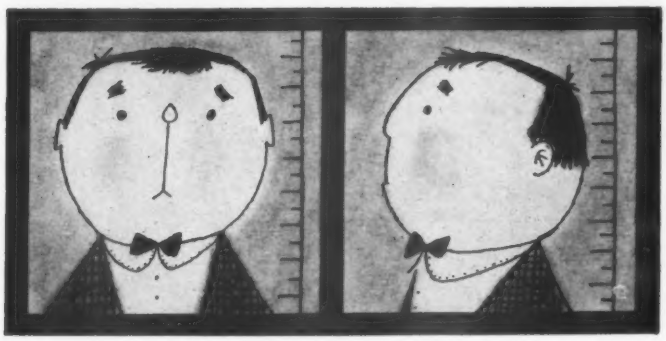
ROHM & HAAS COMPANY

THE RESINOUS PRODUCTS DIVISION

Washington Square, Philadelphia 5, Pa.

Representatives in principal foreign countries

REWARD



for any manufacturer trying
VELSICOL HYDROCARBON RESINS

★ **easier processing...** *greater solubility and compatibility simplify formulation of coating vehicles.*

★ **better finished product...** *rapid air dry, greater hardness, flexibility, and adhesion; in aluminum paints, better leafing, longer leaf retention.*

★ **lower materials costs...** *Velsicol Hydrocarbon Resins impart many qualities of resins costing twice as much. This is another Velsicol bonus: improved quality at lower cost.*

VELSICOL
CHEMICAL CORPORATION

VELSICOL

Look for this man!

. . . your Velsicol Representative—a qualified chemist who can show you how to make better coating vehicles at lower cost with Velsicol Hydrocarbon Resins.

Mail the coupon now for **FREE** samples and technical literature!

VELSICOL CHEMICAL CORPORATION
Dept. 60 330 East Grand Ave., Chicago 11, Illinois

Gentlemen:

☐ Please send me your Technical Bulletins Nos. 203 and 219.
☐ Please send me samples of Velsicol Resins.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

Marbon "9200" ®

Soluble High Styrene Paint Resins

MARBON "9200" for concrete floor enamels can't be matched for fast dry to high hardness; toughness and scuff-resistance; retention of gloss and brightness; excellent water and alkali-resistance; good can stability; and ease of application.

MARBON "9200" HV

for low vehicle solids at higher viscosity

MARBON "9200" MV & LV

for general use

MARBON "9200" LLV

for high vehicle solids at lower viscosity

GET THE FACTS — *Write* TODAY FOR TECHNICAL LITERATURE

MARBON CHEMICAL

Division of BORG-WARNER CORPORATION

GARY, INDIANA

MARBON . . . Your Buy-Word for Product Perfection

J. K. Patterson, 2nd, Vice-President, The Patterson-Sargent Co.

"BEST PAINT SOLD" now formulated with Colton *FLEXBOND 800*

Famous BPS Brands with Copolymer Polyvinyl Acetate Rate Tops with Dealers and Painters

The Patterson-Sargent Co., one of the oldest and finest names in paints, now offers a complete line of Viny-Bond Vinyl Latex Flat Wall Finishes as well as primers and exterior masonry coatings based on Flexbond 800.

The BPS label has always stood for quality. Dealers and painters know and respect BPS quality from long experience. And quality-conscious Patterson-Sargent Co. protects its high standards by choosing Flexbond 800 as the finest Copolymer Polyvinyl Acetate to achieve outstanding film integrity, scrub resistance, sheen uniformity, easy brushing and package stability. Independent tests by Daniel-Litter Laboratories on Flexbond 800 are proof positive of the soundness of this choice.

Dealers who push Patterson-Sargent paints with Flexbond 800 find that all-out consumer endorsement means profitable sales and repeat orders.

Our representatives will be glad to review with you the Daniel-Litter Laboratories report . . . and show you what Flexbond 800 can do in your paint formulations. *Write to Dept. F92*

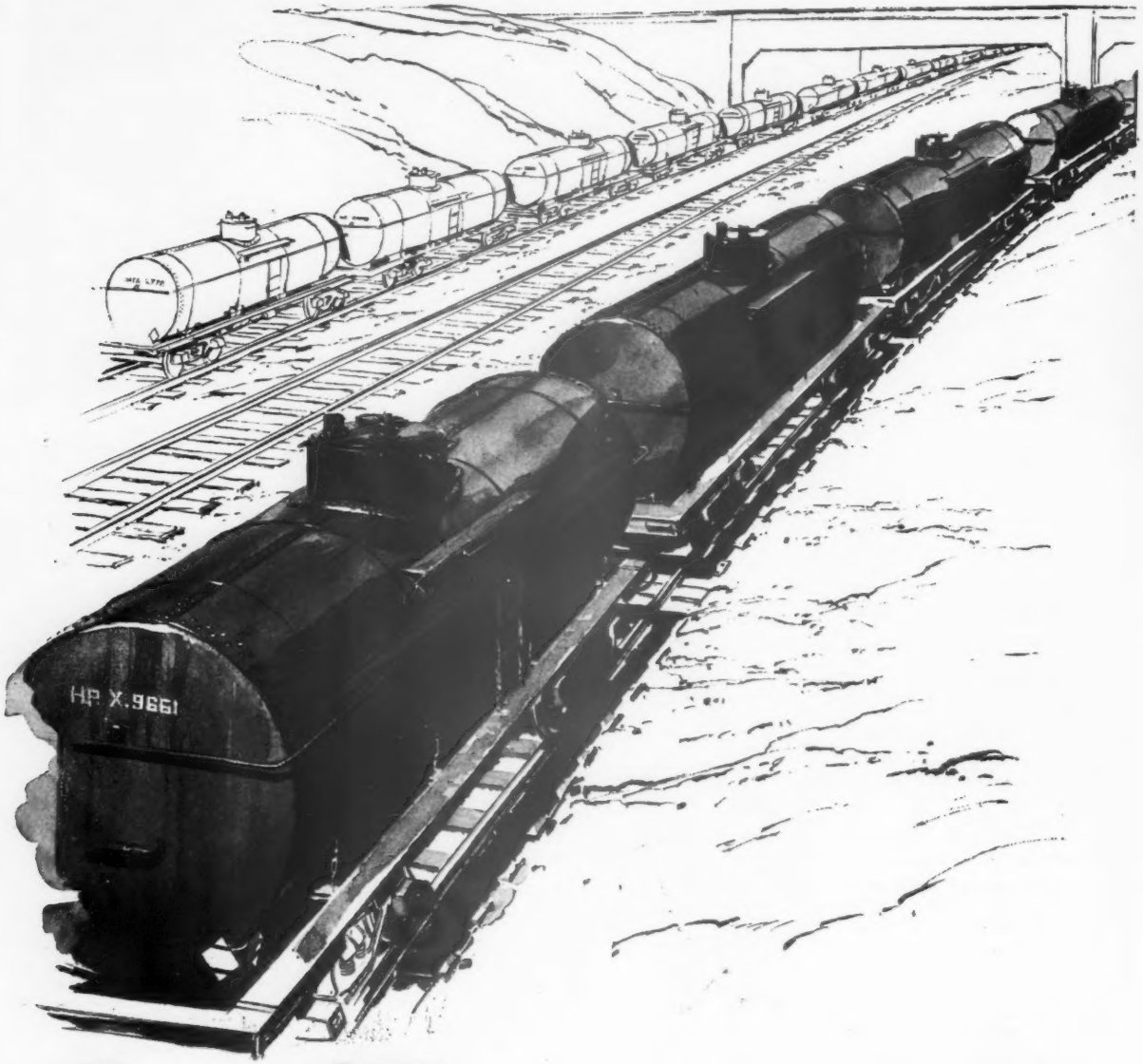
COLTON **COLTON CHEMICAL COMPANY**

A Division of Air Reduction Company, Inc. • 1747 Chester Avenue, Cleveland 14, Ohio

SALES OFFICES AND WAREHOUSE FACILITIES THROUGHOUT U. S.
EXPORT: AIRCO COMPANY INTERNATIONAL, NEW YORK 17, N. Y.

Dependable . . .

Car . . . after car . . . after car



Cargill Incorporated

Cargill
CREATIVE PROCESSING

Suppliers to the Paint and Varnish Industry

Linseed Oil • Soybean Oil • Fish Oil • Alkyd Resins • Specialty Products

What a Test Fence Can Tell You About PVA Paints

Du Pont Test Panels Show You the Results of Long Term Exposure

A FEW hours at our test farm can save you much time and money when developing your PVA paint formulations. You can see and examine hundreds of test panels, check the extensive exposure data, get competent advice about the best way to use "Elvacet" in exterior masonry paints.

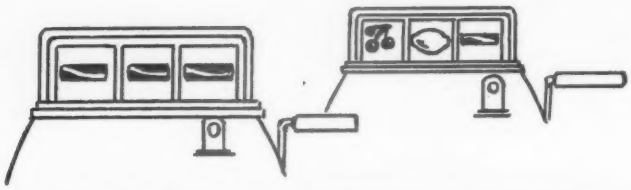
Take the guesswork out of formulating and exposure durability. If you have questions on pigmentation, chalking rates, plasticization, mildewcides etc., you can find the answers on our test panels. Now's a good time to get this information—so why don't you arrange for a worthwhile visit to the Elchem test fences. Just call or write and we'll set up a time which is most convenient for you.

E. I. du Pont de Nemours & Company (Inc.)
Electrochemicals Department
Wilmington 98, Delaware

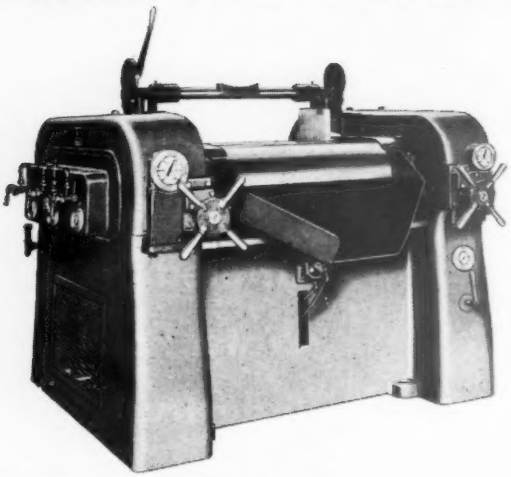
DUPONT
REG. U.S. PAT. OFF.

Better Things for Better Living . . . *through Chemistry*

DU PONT
ELVACET
POLYVINYL ACETATE
FOR WATER BASE PAINTS



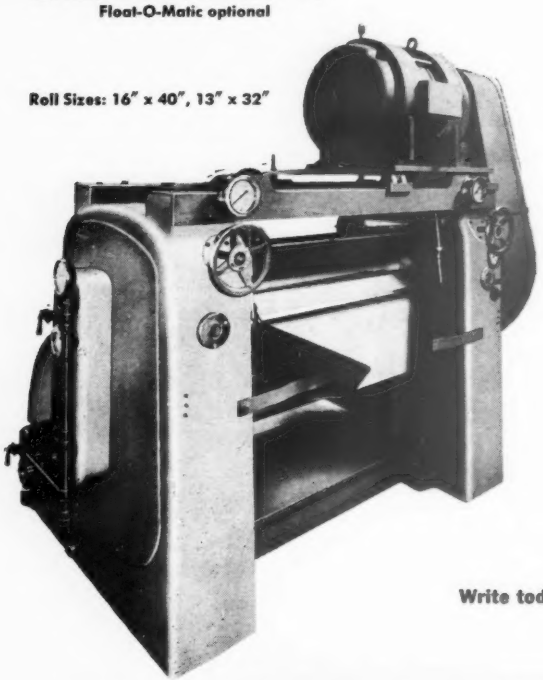
ONLY ONE COMBINATION REALLY PAYS OFF



Roll Sizes: 16" x 40", 13" x 32", 9" x 24"
Float-O-Matic optional

...IN LOW COST PAINT MILLING, TOO!

Roll Sizes: 16" x 40", 13" x 32"



It's no gamble when you choose the Lehmann high production economy pair of Three Roll Paint Mills to help you increase your production profits. Together the 631-V Vertical Mill for large batch, high production work and the 662-V Horizontal Mill for small batch production, reduce paint milling costs more than any other combination of mills . . . providing more profits to plants large or small.

Both of these mills are equipped with Lehmann's exclusive *threefold* Sight-O-Matic* gauge control over (1) dispersion, (2) take-off efficiency, (3) product temperature. All adjustments are simpler, faster, more accurate.

Lehmann is also equipped to offer milling research service on samples of your formulations, without obligation, and Certified Factory Reconditioning Service on any of your present mills.

Write today for further details on any of Lehmann's machines or services.

*Reg. U. S. Pat. Off.

LEHMANN®

J. M. LEHMANN COMPANY, Inc.

COAST-TO-COAST SERVICE

Moore Dry Dock Company
Oakland, California

Lammert & Mann Co.
Chicago 12, Illinois

J. M. Lehmann Co., Inc.
Lyndhurst, New Jersey

Naugatuck Acetex 2700

New Vinyl Acetate Copolymer Emulsion

Greatest Latex We Have Ever Offered the Water Paint Industry!

Although we have made many latices for the manufacture of water-based paints, we're especially enthusiastic over the possibilities of this new ACETEX®.

Here is a new type vinyl acetate copolymer emulsion containing smaller, unusually uniform resin particles and an emulsifier system that is nonionic in nature. These features contribute to better film formation... excellent binding power ...good water resistance... high chemical and mechanical stability.

Compared to a straight polyvinyl acetate, in the manufacture of paint, this new copolymer—

- **Eliminates the plasticizing process, including equipment and diffusion time.**
- **Eliminates possibility of flushing hydrophobic pigments, promoting color stability in storage.**
- **Promotes stability of paint film.**

Designated as ACETEX 2700, this copolymer emulsion produces a paint that has a very low odor level, unusually good resistance to coagulation upon repeated freezing and thawing, and the ability to form a good film when applied at low temperatures.

Write for data sheet including suggested formulations for interior wall paint, primer-sealer and exterior masonry paints based on ACETEX 2700.

United States Rubber

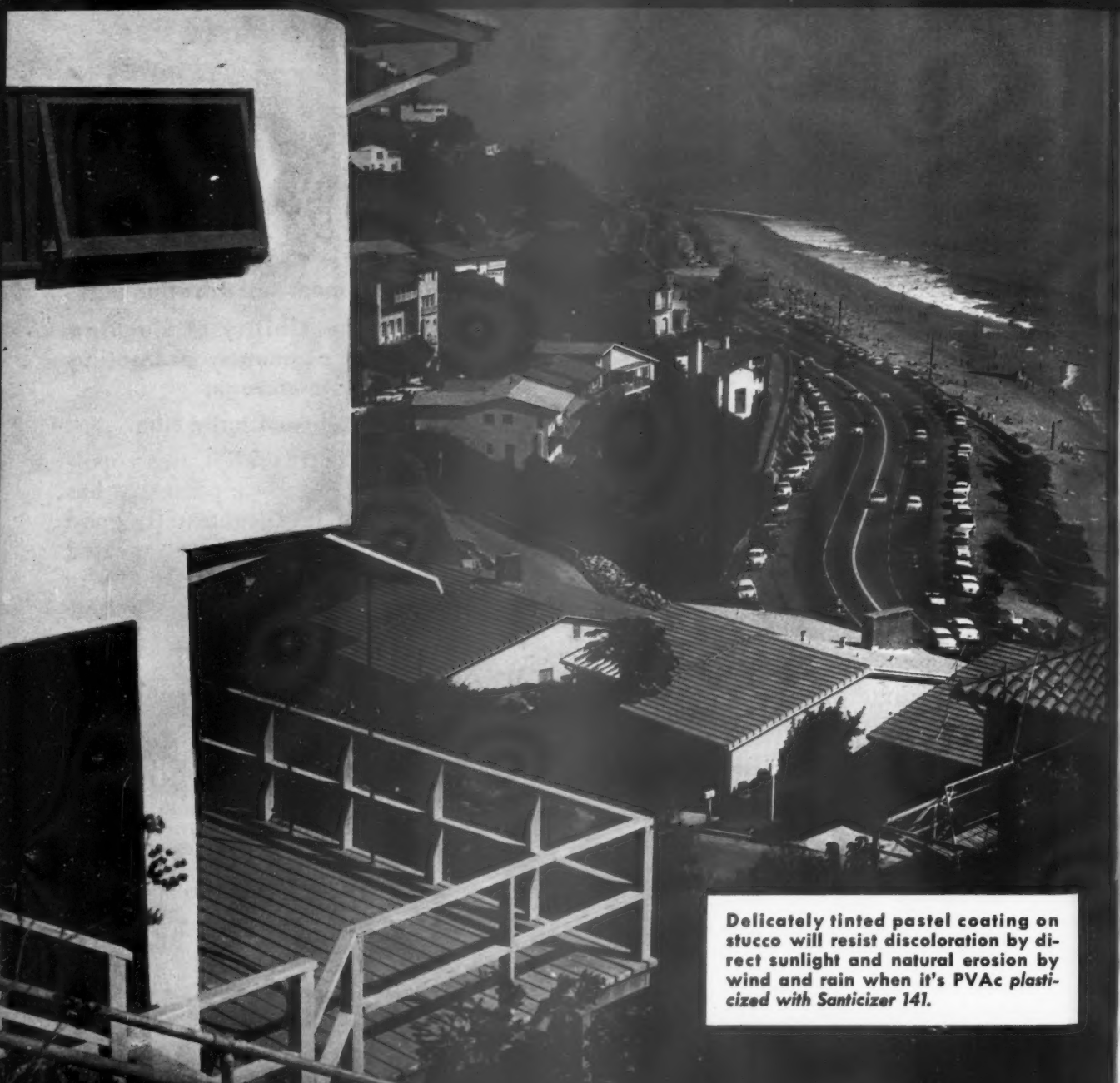
Naugatuck Chemical Division

Naugatuck, Connecticut

BRANCHES: Akron • Boston • Chicago • Memphis • New York • Philadelphia • **Mfg.:** Naugatuck • Gastonia • Los Angeles • **CANADA:** Latex Div., Dominion Rubber Co., Ltd., Montreal • **Cable:** Rubexport, N.Y. • Rubber Chemicals • Synthetic & Reclaimed Rubber • Plastics • Agricultural Chemicals • Latices

FOR SPECIAL PROPERTIES IN VINYL COATINGS...

STANDARDIZE ON MONSANTO



Delicately tinted pastel coating on stucco will resist discoloration by direct sunlight and natural erosion by wind and rain when it's PVAc *plasticized with Santicizer 141.*

This PVAc primer-sealer will help top coats look better longer because it's plasticized with *Santicizer 160*—high in moisture resistance, low in volatility.

This heavy-duty industrial coating will resist attack by an unusually wide range of caustics, acids, and solvents because it's plasticized with *Aroclor 1254*.

Want better outdoor performance for PVAc paints? Controlled exposure tests prove that Santicizer* 141 (alkyl aryl phosphate) is outstanding for plasticizing PVAc systems designed for rugged outdoor wear. Because it helps paint films stand up against moisture, erosion, and ultraviolet degradation, Santicizer 141 is a natural choice for PVAc paints pigmented in delicate pastels or whites. *Santicizer 141 is one of the lowest-cost phosphate plasticizers on the market.*

Need more moisture resistance, permanence for PVAc primer-sealers? Santicizer 160 (butyl benzyl phthalate) boosts polyvinyl acetate's moisture resistance—all-important in primer-sealer systems. It is excellent for imparting resistance to greases and oils. And because volatility is low, Santicizer 160 offers higher plasticizer permanence.

Important: *Santicizer 160 is replacing dibutyl phthalate because it improves performance, but costs less.*

Looking for more chemical resistance in heavy-duty vinyl coatings? Aroclor* 1254 (chlorinated biphenyl) protects against a wider range of caustics, acids, and solvents than any other plasticizer. For an analytical comparison of Aroclor 1254 with other plasticizers for paints, write Monsanto for "*The Effect of Modifiers on the Chemical Resistance of Vinyl Films*," reprinted from the November 1955 issue of "*Official Digest*" (*Federation of Paint and Varnish Production Clubs*).

PHTHALATES • ADIPATES • PHOSPHATES • PHTHALYL GLYCOLATES
SULFONAMIDES • CHLORINATED POLYPHENYLS • SPECIALTIES

*Reg. U. S. Pat. Off.

Plasticizers For:

Nitrocellulose • Polyvinyl Acetate
Epoxy • Styrene-butadiene
Polyvinyl Chloride • Zein
Shellac • Polystyrene Latex
Cellulose Acetate • Butyrate

For additional information on Monsanto plasticizers for surface coatings, contact your Monsanto representative or write:
MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, Department PT-5, St. Louis 1, Missouri

MONSANTO

Where Creative Chemistry Works Wonders For You

Now for house paint formulations

EAGLE-PICHER
414 ZINC OXIDE
LEAD FREE
wets easier, faster!
reduces oil demand!

Now, after years of extensive research and development in the Eagle-Picher laboratories, the new 414 Zinc Oxide has been "fence-tested" and proved on the job. It provides these unique and highly desirable features in your house paint formulations:

- **Reduced oil demand! Saves money!**
- **Increased gloss retention!**
- **Superior mildew resistance!**
- **Improved blister resistance!**
- **Greater film flexibility!**
- **Easier, more uniform brushing qualities.**

AND REMEMBER . . .

Eagle-Picher maintains rigid quality control from ore to finished pigment . . . and as the largest producer of *both* zinc and lead pigments, provides unequalled and unbiased customer service.

Since 1843

EAGLE EP PICHER

THE EAGLE-PICHER COMPANY

Largest Producer of Both Zinc and Lead Pigments

General Offices: Cincinnati 1, Ohio

Regional Sales Offices: Chicago, Cleveland, Dallas, New York, Philadelphia, Pittsburgh

TARGET

... Quality Control

from FLAX to FINISH!

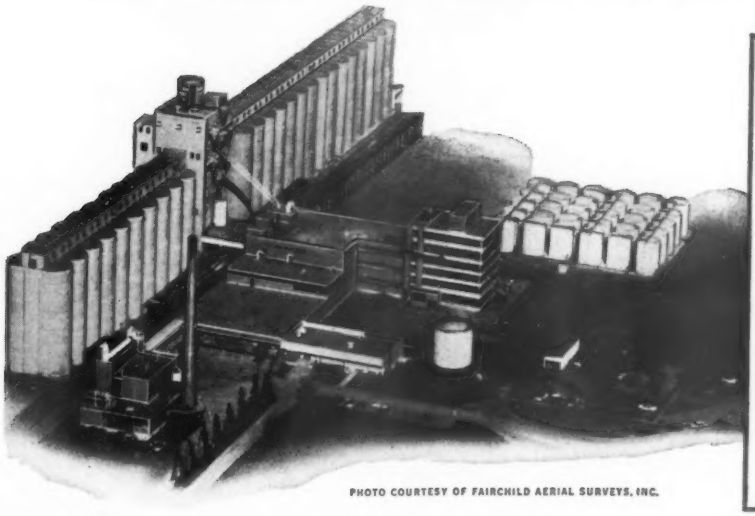


PHOTO COURTESY OF FAIRCHILD AERIAL SURVEYS, INC.

- UNIFORM QUALITY CONTROLLED
- DOUBLE FILTERED FOR PURITY
- LAB ANALYSIS ON EACH CAR
- SHIPPED ONLY IN CLEAN TANK CARS

A QUALITY, superior base for paint formulation such as Minnesota Linseed Oil, is the result of concentration on a single target. To consistently produce a better product, this long established company specializes in linseed oil from the purchase of seed to the delivery of processed oil. Produced in the most modern plant of its type, Minnesota Linseed Oil is absolutely pure—every batch is *double filtered* and *test sampled* before shipment in *thoroughly cleaned tank cars.* Get the complete story from your nearest Minnesota Linseed Oil Sales Representative.

REPRESENTATIVES

BOSTON, MASS.
The Truesdale Co.
52 Cambridge St.

CHICAGO, ILL.
National Lead Co.
900 West 18th St.

CLEVELAND, OHIO
Norman G. Schabel Co.
20950 Center Ridge Road

CONSHOHOCKEN, PA.
Van Horn Metz & Co.
241 East Elm St.

DAYTON, OHIO
The Dayton Oil Co.

DETROIT, MICHIGAN
Baker & Collinson
12000 Mt. Elliott Ave.

LOS ANGELES, CALIF.
Stay & Day Paint Materials Co.
363 South Mission Road

NEW ORLEANS, LA.
Roy T. Cucullu Co.
4818 Lancelot Drive

NEW YORK, N. Y.
John H. Calo Co.
19 Rector St.

PITTSBURGH, PA.
Joseph A. Burns & Son
124 Harrison Ave.

SAN FRANCISCO, CALIF.
Wm. C. Loughlin Co.
311 California St.

Minnesota
LINSEED OIL CO.

MINNEAPOLIS 21, MINNESOTA • PHONE: SUnset 8-9011

SPECIFY MINNESOTA — IT'S PURE — LINSEED OIL

SINCE 1870

better protection against corrosion!

Corrosion of metals, the age-old problem of paint chemists, is getting a real going over with "wash primers" based on Shawinigan Resins' FORMVAR and BUTVAR . . . polyvinyl formal and butyral resins.

These anti-corrosive primers, sometimes referred to as metal conditioners, apply easier, adhere better, dry faster than more conventional materials. In addition, they assure a better foundation for paint systems while preventing underfilm corrosion. Wash primers prevent corrosion in a threefold protective action. First, an inorganic phosphate film is formed at room temperature rather than in the usual hot bath; second, the primers provide a steady stream of chromate ions to fill any pin holes in the film; finally, a tanned polymeric acetal film which provides outstanding mechanical protection forms over the phosphate film. All this is accomplished in one operation.

The wash primer protective coating of only 0.3 to 0.8 mil thickness, is a tough, corrosion resistant conditioner for steel, aluminum, cadmium, tin, galvanized iron and magnesium. Formulation of a system is easy in your regular ball or pebble mill.

The use of "wash primers" has extended the life of metals in many applications and has opened profitable new markets for paint manufacturers. For full technical information, resin samples and suggested formulations, write Shawinigan Resins Corporation, Department 2211 Springfield 1, Massachusetts.

FORMVAR® *and* BUTVAR® *resins by*

SHAWINIGAN RESINS

THIN FILM EVAPOROMETER

Shell Chemical development is used as a guide in formulating automotive lacquer thinners

By
J. P. McGuigan*

THE role played by quick-drying nitrocellulose lacquer in this age of mass production in the automobile industry is well known. It is a coating which lends itself to assembly line timing and equals, if not surpasses, other conventional coatings in performance and appearance.

Nitrocellulose lacquers are largely dependent upon precise formulation of the thinner system for satisfactory performance with respect to those properties which contribute toward their overall quality and desirability. Such properties as film build, drying time, flow and blush resistance are influenced by solvent choice and correct solvent balance. These properties are inter-related insofar as they are all primarily dependent upon the volatility characteristics of the thinner system. It follows, therefore, that volatility can be used as a guide in estimating the overall performance of a thinner formulation.

Because of the usefulness and importance of volatility, it is extremely desirable in formulating lacquer thinners to have a means of quickly and accurately determining the evaporation characteristics of not only the thinner mixture itself, but also the various pure solvents, alcohols, and hydrocarbons with which the thinner is formulated. With the development of the Shell Evaporometer by the *Shell Development Company* in 1949, an instrument satisfying the requirements of speed and accuracy became available. The Evaporometer, with some modification, has seen continuous application in Shell Laboratories in both control and product applications work ever since.

Operation

In its present form, the Thin Film Evaporometer[1] (Figure 1) consists of a jolly balance type of instrument enclosed in a cabinet through which down draft air circulation at 21 liters per minute (0.75 cfm.) is accurately main-

1. Available from Roxanna Machine Works, St. Louis, Mo.

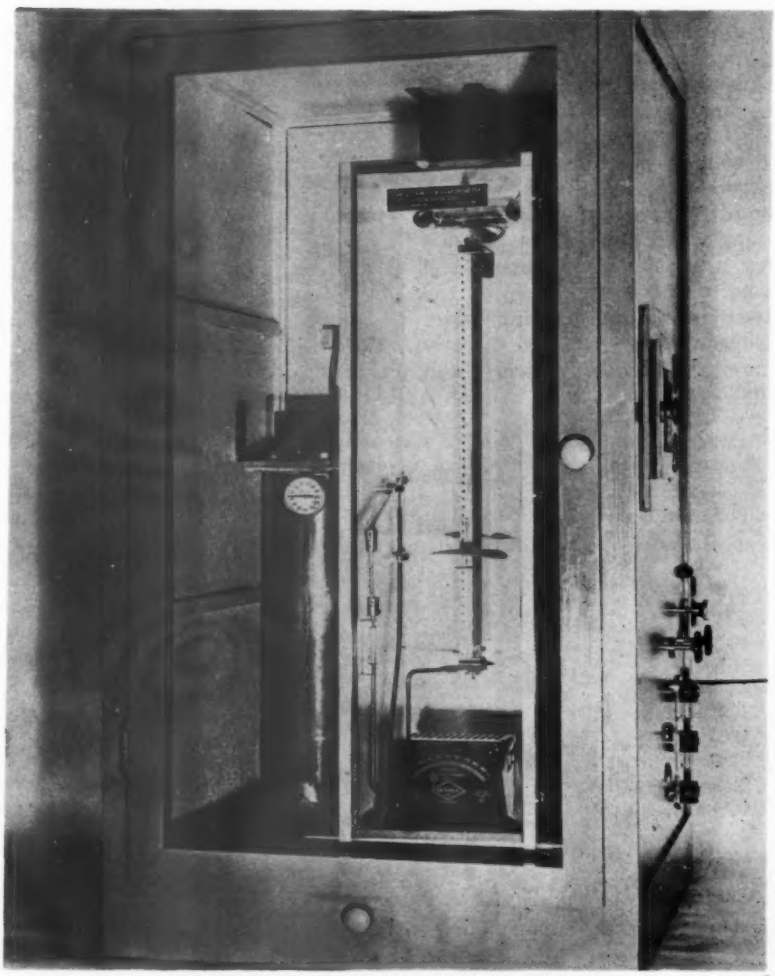


Figure 1. Shell Thin Film Evaporometer

*J. P. McGuigan is associated with the Shell Chemical Corp., Union, N. J. This paper was presented before the 42nd mid-year meeting of the Chemical Manufacturers' Association, Automotive Division in Chicago, Ill., May 21, 1956.

[1]Evaporation Data, (Time, Seconds)	Solvent					
	Methyl Ethyl Ketone	Isopropyl Acetate (95%)	Methyl Isobutyl Ketone	n-Butyl Acetate	"Cellosolve" Acetate	Ethyl Amyl Ketone
10%w	12	13	28	48	270	215
20%w	24	25	57	96	580	420
30%w	36	38	87	145	880	630
40%w	48	52	117	196	1180	835
50%w	61	65	147	247	1480	1040
60%w	74	78	178	300	1780	1250
70%w	88	93	210	350	2100	1460
80%w	103	107	242	402	2400	1675
90%w	118	127	279	458	2740	1890
95%w	127	139	303	490	2920	2000
100%w	150	160	345	550	3400	2260
[2]Relative Evaporation Rate	3.9	3.6	1.6	1.00	0.17	0.24
Basic Solvent Properties						
[3]Viscosity, Nitrocellulose Solution, cp. at 25°C	17	31	33	42	68	75
[3]Blush Resistance, % R.H. at 80°F	45	62	78	83	90	92
[4]Cost, Dollars per Gallon	0.772	0.759	0.902	0.983	1.378	1.195

1. Determined on Shell Thin Film Evaporometer, 0% R.H. and 25°C.
2. Based on 90% evaporated time, normal butyl acetate = 1.0
3. Eight grams R.S. ½-second nitrocellulose (dry) per 100 mls. solvent
4. Tank car delivered, April 16, 1956

Table I. Evaporation data and basic solvent properties of active solvents.

tained. The air is conditioned to 0% relative humidity and 77° F by passing it through a drying train and simple heat exchanger. An accurately measured volume of the solvent or thinner being investigated is dispensed with a hypodermic syringe uniformly around a filter paper disc suspended from a sensitive calibrated steel spring. The evaporation of the solvent is followed on a millimeter scale and mirror situated directly behind the disc and spring, and

[1]Evaporation Data (Time, Seconds)	Ratio MEK-MIBK				Isopropyl Acetate (95%)
	100/0	90/10	80/20	70/30	
10%w	12	13	13	13	13
20%w	24	25	27	28	25
30%w	36	38	41	43	38
40%w	48	52	56	60	52
50%w	61	66	71	76	65
60%w	74	80	87	95	78
70%w	88	96	105	115	93
80%w	103	112	124	138	107
90%w	118	131	147	167	127
95%w	127	143	163	185	139
100%w	150	170	200	220	160
[2]Relative Evaporation Rate	3.9	3.5	3.12	2.74	3.6

1. Determined on Shell Thin Film Evaporometer, 0% R.H. and 25°C
2. Based on 90% evaporated time, normal butyl acetate = 1.0

[1]Evaporation Data (Time, Seconds)	ALCOHOL			
	Ethyl (Proprietary)	Isopropyl	Secondary Butyl	Methyl Isobutyl Carbinol
10%w	29	35	57	210
20%w	57	68	110	430
30%w	86	100	165	650
40%w	116	134	220	870
50%w	147	168	278	1090
60%w	178	202	335	1310
70%w	213	237	395	1540
80%w	250	272	455	1760
90%w	295	315	522	2000
95%w	323	332	565	2110
100%w	380 (98%w)	370	660	2400
[2]Relative Evaporation Rate	1.6	1.5	0.9	0.23
[3]Cost, Dollars per Gallon	0.45	0.41	0.774	0.909

1. Determined on Shell Thin Film Evaporometer, 0% R.H. and 25°C
2. Based on 90% evaporated time, normal butyl acetate = 1.0
3. Tank Car Delivered, April 16, 1956.

Table II. Evaporation characteristics of methyl ethyl ketone-methyl isobutyl ketone blends and isopropyl acetate. (*above*)

readings taken at convenient time intervals. From the scale readings, the volume and density of the sample and the spring constant, the weight per cent evaporated at each reading is calculated. Volatility is reported as the time for varying weight percentages to evaporate up to and including 100 per cent. The Evaporometer is completely contained within a controlled temperature enclosure,

Table III. Evaporation characteristics of alcohols. (*left*)

thereby eliminating the need for a constant temperature room.

The oxygenated hydrocarbons, or active solvents, used in lacquer thinners are divided arbitrarily into three groups based on their volatility; fast evaporating solvents having a relative evaporation rate of greater than 3.0, medium evaporating solvents having a relative evaporation rate of 0.8 to 3.0, and slow evaporating solvents having relative evaporation rates of less than 0.8. Relative evaporation rates are based on normal butyl acetate as equal to 1.0. Shown in Table I are evaporation data, determined on the Shell Thin Film Evaporometer, for several solvents in each of the three groups. Also shown are some basic properties which indicate a general trend of higher viscosity, higher blush resistance, and higher cost as evaporation rate decreases.

Besides providing a means of determining the evaporation characteristics of pure solvents as just shown, the Thin Film Evaporometer allows the determination of what are termed volatility equivalents. Any two solvents may, of course, be blended to give a mixture having an intermediate evaporation rate. For example, the methyl ethyl ketone/methyl isobutyl ketone volatility equivalent for isopropyl acetate is selected by determining the evaporation characteristics of several blends of the solvents methyl ethyl ketone and methyl isobutyl ketone as shown in Table II. The relative evaporation rates, based on the 90% evaporated times, are calculated and plotted versus blend composition (Figure 2). The blend, equivalent with isopropyl acetate in relative evaporation rate, is then read off.

Also of importance to the thinner formulator are the alcohols. Alcohols, usually referred to as latent solvents, are not solvents for nitrocellulose; but their presence with an active solvent increases the apparent solvency of the active solvent. The alcohols contribute toward the general performance of a thinner and lessen its cost.

The evaporation characteristics of several commonly encountered latent solvents as determined on the Shell Thin Film Evaporometer are shown in Table III.

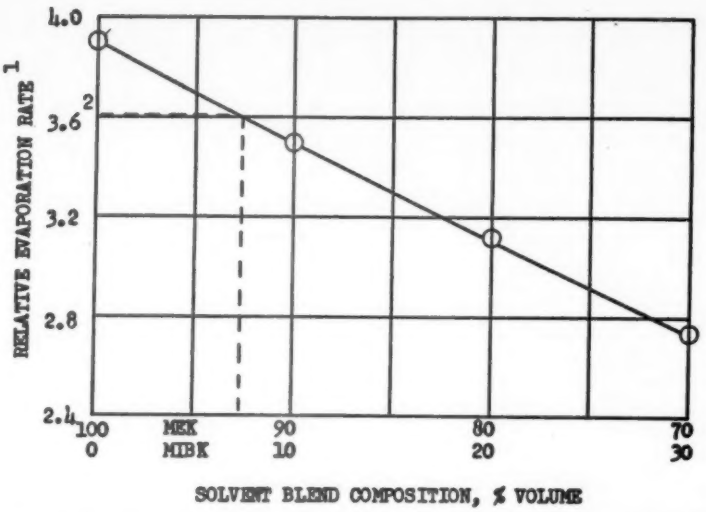


Figure 2. Determination of volatility equivalent from evaporation data.

Approximately 50 per cent of a lacquer thinner is made up of aromatic and aliphatic hydrocarbons, diluents. These materials are the lowest priced components and their judicious use can improve the overall performance of the solvent system while still keeping cost at a minimum. The number of diluents available to the formulator probably numbers in the hundreds and offer a great range in volatility. The evaporation characteristics of some diluents are given in Table IV.

Automotive Lacquers

Automotive lacquers in commor

	Diluent			
[1]Evaporation Data (Time, Seconds)	Toluene (Aromatic)	Xylene (Aromatic)	[3]"Tolu-Sol" (Aliphatic Naphtha)	[4]Shell "TS-28" (Aromatic Naphtha)
10%w	25	68	15	240
20%w	50	140	29	540
30%w	74	212	43	880
40%w	99	285	58	1270
50%w	124	360	74	1690
60%w	150	435	90	2170
70%w	176	512	106	2720
80%w	202	590	123	3370
90%w	229	669	140	4350
95%w	244	717	149	4960
100%w	270	780	170	6200
[2]Relative Evaporation Rate	2.0	0.7	3.3	0.105

1. Determined on Shell Thin Film Evaporometer at 0% R.H. and 25°C
2. Based on 90% evaporated time, normal butyl acetate = 1.0
3. Aliphatic Naphtha, boiling range 203-218°F, Shell Oil Company
4. Aromatic Naphtha, boiling range 318-395°F, Shell Oil Company

Table IV. Evaporation characteristics of hydrocarbon diluents.

Formulation, %v	1	2	3
Methyl Ethyl Ketone	7.0	8.0	6.0
Methyl Isobutyl Ketone	18.0	16.0	19.0
Ethyl Amyl Ketone	—	4.0	5.0
Isopropyl Alcohol	12.0	10.0	9.0
Methyl Isobutyl Carbinol	—	—	4.0
Toluene	31.5	25.0	23.0
Xylene	—	10.0	15.0
"Tolu-sol"	31.5	27.0	19.0
	100.0	100.0	100.0
[1]Cost, Dollars per Gallon	0.432	0.465	0.516
Thinner Properties			
[2]Evaporation Data (Time, Seconds)			
10%w	15	15	17
20%w	31	32	38
30%w	48	50	58
40%w	65	69	82
50%w	83	90	107
60%w	103	113	137
70%w	125	142	172
80%w	148	176	217
90%w	178	223	282
95%w	195	260	325
100%w	230	340	420
[3]Viscosity, cp. at 25°C	50	49	49
[3]Blush Resistance, % R.H. at 80°F	73	77	80
[4]Flow (10-Best, 0-Poorest)	5	8	9

1. Based on Tank Car Delivered Prices, April 16, 1956
2. Determined on Shell Thin Film Evaporometer, 0% R.H. and 25°C
3. Eight grams R.S. ½-second nitrocellulose (dry)/100 mls. thinner
4. Commercial Base Lacquer 1 volume to Thinner 1¼ volume. Sprayed on glass panels.

Table V. Evaporation characteristics and basic properties of typical conventional type automotive thinners.

use in the trade are used with thinners which may be divided into two general types: The conventional thinner system and the high solvency (high-low) type of formula. The conventional thinner containing low, medium and high boiling alcohols and aromatic and aliphatic hydrocarbon diluents is generally formulated to have the following characteristics:

1. Good solvency.
2. Good flow out
3. Adequate blush resistance
4. Reasonable drying time
5. Cost commensurate with performance.

This type of thinner probably finds its greatest use in automobile refinishing shops with its application in new car finishing more limited. Shown in Table V are three typical conventional formulations and some basic properties. It will be noted that the three formulations indicate a range not only in properties and price, but also in volatility. These formulations may be considered representative of the performance to be expected for their particular volatility and may be used as a guide in estimating the probable performance of thinners of similar composition by comparison of quickly determined evaporation data.

The high solvency or high-low thinner, which takes advantage of some basic concepts of solvent and lacquer technology, contains predominately low and high-boiling oxygenated solvents, alcohols and hydrocarbon diluents designed to

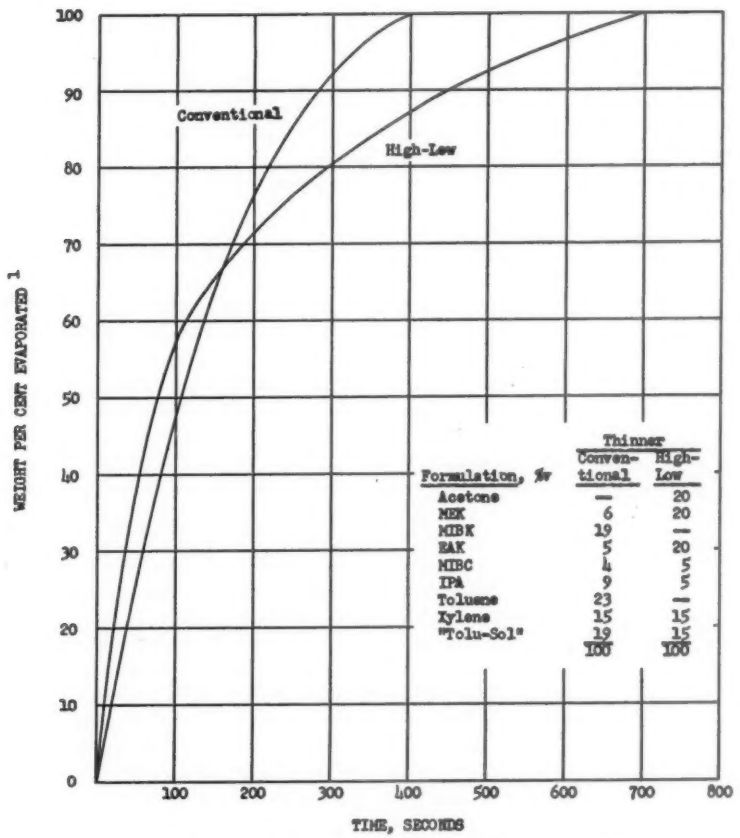
Formulation, %v	Conventional	High-Low
Acetone	—	20
Methyl Ethyl Ketone	6	20
Methyl Isobutyl Ketone	19	—
Ethyl Amyl Ketone	5	20
Methyl Isobutyl Carbinol	4	5
Isopropyl Alcohol	9	5
Toluene	23	—
Xylene	15	15
"Tolu-Sol"	19	15
	100	100
[1]Cost, Dollars per Gallon	0.516	0.644
Thinner Properties		
[2]Evaporation Data (Time, Seconds)		
10%w	17	10
20%w	38	22
30%w	58	36
40%w	82	53
50%w	107	77
60%w	137	114
70%w	172	186
80%w	217	295
90%w	282	450
95%w	325	560
100%w	420	700
[3]Viscosity, cp. at 25°C	49	32
[3]Blush Resistance, % R.H. at 80°F	80	82
[4]Flow (10-Best, 0-Poorest)	9	10

1. Based on Tank Car Delivered Prices, April 16, 1956
2. Determined on Shell Thin Film Evaporometer, 0% R.H. and 25°C
3. Eight grams R.S. ½-second nitrocellulose (dry) per 100 mls. thinner
4. Conventional thinner 1¼ volume — Commercial Base Lacquer 1 volume, High-Low thinner 1 volume — Commercial Base Lacquer 1 volume, sprayed on glass.

Table VI. Comparison of evaporation characteristics and basic properties of conventional high-low thinners.

Evaporation Data, Seconds at 25°C, 0% R.H.	Weight, % Evaporated		
	Run 1	Run 2	Run 3
40	24.6	24.6	24.6
60	35.2	35.2	35.9
80	45.0	45.0	45.0
100	54.2	53.5	54.2
120	61.9	61.9	61.9
140	69.0	68.3	69.0
160	74.6	74.6	74.6
180	80.2	80.2	80.9
200	85.8	85.1	85.8
220	89.4	89.4	89.4
240	92.9	92.9	92.9
260	95.0	95.0	95.0
280	97.1	97.1	97.1
300	98.5	97.7	98.5
310	99.2	—	—
320	—	98.5	99.2
340	100.0	99.2	100.0
360	—	100.0	—

Table VII. Repeatability of Shell Thin Film Evaporometer data for three consecutive runs of thinner No. 3, Table V.



(1) Determined on Shell Thin Film Evaporometer, 0% R.H. and 25°C

Figure 3. Comparison of evaporation characteristics of typical conventional and high-low thinners.

give, as compared to conventional thinners:

1. Superior solvency
2. Higher build
3. Good to excellent flow out
4. High blush resistance
5. Reasonable drying time
6. Cost commensurate to performance

Shown in Table VI are two thinner formulations, one a high-low type, the other a conventional repeated from Table V for purpose of comparison. Besides the obvious difference in the composition of the active solvent portions of these two formulations, it will be noted that there is a wide difference in their volatility characteristics. This is more evident in a plot of the evaporation data shown in Figure 3. Examination of the properties of these two solvent systems indicates the points of superiority for the high-low type formulation.

In the major portion of the foregoing data, it will be observed that the total evaporation time for solvents and thinner systems seldom exceeds about six minutes. Because of the precision with which the evaporation determinations are made on the Shell Thin Film Evaporometer not more than two runs are required to satisfactorily determine the evaporation curve. An indication of the repeatability of the Evaporometer is given in Table VII. Data for three consecutive runs on a thinner formulation (No. 2 from Table V) are shown. This is typical of the precision obtained. The amount of time required for the determinations together with the time required for necessary calculations involves not more than approximately 15 to 20 minutes indicating that the Shell Thin Film Evaporometer is a valued tool in any laboratory where precision and speed are essential.

SURFACE AVAILABILITY OF INHIBITORS IN PROTECTIVE COATING SYSTEMS

Part I—Dichromate Treatment of Magnesium Surfaces

By
Dr. Max Kronstein
Joseph C. Pettorino

Research Division
College of Engineering
New York University

In the corrosion protection of metals it has been established that certain groups, such as chromate matter, have a delaying effect on the progress of corrosion. This paper is concerned with the effect of dichromate sealer treatments on pre-pickled FS-1 magnesium and shows that panels with this treatment and one subsequent coat of an organic coating resist the corrosive exposure in the saltfog chamber longer than without this treatment. The effect of the treatment is depending also on the pH of the treating solution.

That the treatment actually produces a chromium-based coating is shown by the X-ray spectrograph. That the coating is capable of releasing soluble matter is shown by pH measurements in distilled water to which these surfaces have been immersed for certain time intervals. The matter which enters the water solution, reacts with materials which are capable of forming colored chromate derivates, and the progress of the this chromate formation can be measured by colorimetric methods.

The rate of the release of this soluble matter can be delayed by the application of a protective film of a clear lacquer before the water immersion of the treated surfaces.

INHIBITING the corrosion rate of metal surfaces has been the object of considerable attention in recent years, and much work has been done in this field. This study is concerned with the inhibiting of corrosion of metal surfaces which are to receive a system of organic coatings. That is, it is interested in the application of a corrosion inhibiting treatment on the metal surface itself; the treatment then to be used as the paint base.

It is particularly interested in the application of an inhibiting treatment based on chromate or dichromate matter and the studies of this treatment on magnesium surfaces.

The immersion of pre-pickled magnesium in a boiling sodium dichromate solution has been used in industrial practice for some time. It has been assumed that this treatment acts as a surface "sealer" to increase the adherence of the paint system. This work shows the "sealer" application as a formation of a chromium based coating on the magnesium itself, which is characterized by the fact that it is capable of releasing chromate ions. Hence, the surface resulting from the sealer treatment, which is in contact with the metal itself, is studied as a source of inhibiting matter.

*The work reported in this paper was carried out under a development contract with the U. S. Navy, Bureau of Aeronautics.
This paper was presented at the Meeting in Minature of the New York Section of the American Chemical Society on March 16, 1956.

Test Approach

Dichromate in the surface treatment of magnesium are generally used in two different ways: as part of a surface pickle, such as shown in Table 1, and generally referred to as the Dow 1 chemical treatment; or as a separate treatment after a pre-treatment of the metal surface, that is, as a "sealer" of the pre-treated surface. This latter method, shown in Table 2, is generally referred to as the Dow-7 chemical treatment and is the one with which this study is chiefly concerned.

The difference between the two treatments is:

a) The number of operations required in application (one step versus two steps).
b) The temperature of the dichromate solution in application (room-temperature versus 200° F.)
c) The composition and the pH range of the dichromate solution.
d) The duration of the application of the dichromate solution (1 min. versus 30 min.)

In the Dow-1 chemical treatment described in Table 1, the acid part of the treatment, which is contributed by the nitric acid, is a part of the dochromate solution. In the Dow-7 chemical treatment described in Table 2, the acid treatment, which is an ammonium fluoride solution, is a separate step which precedes the dichromate application.

COMPOSITION OF THE PICKLE:	SODIUM DICHROMATE	680 grams
	NITRIC ACID (SP.GR. 142)	910 grams
	WATER, TO MAKE 1 GALLON.	
APPLICATION:	8 PANELS MAGNESIUM FS-1 DEGREASED WITH TOLUENE AND DRIED.	
	ALKALI CLEANED: 10 MIN. AT 100°C.	
	(CLEANER: SODIUM CARBONATE ANH.	55.8 grams
	SODIUM HYDROXIDE PELLETS	57.0 grams
	WETTING AGENT (TERGITOL #08)	3.0 grams
	WATER, TO MAKE 1 GALLON.)	
	TAP WATER RINSE: 1 MIN.	
	PANELS IMMERSED, IN TWO GROUPS OF 4 PANELS EACH, IN THE PICKLING SOLUTION, FOR 1 MIN. AT ROOM TEMPERATURE.	
	AIR DRIED: 5 SECONDS.	
	COLD WATER RINSE: 30 SECONDS.	
	HOT WATER RINSE: 15 SECONDS AT 80°C.	
	OVEN DRIED.	
ORGANIC COATING:	PRIMER	
	TOP COAT	

Table 1. Treatment of magnesium surfaces with a dichromate pickle.

COMPOSITION OF THE PICKLE:	AMMONIUM FLUORIDE	191 grams
	WATER, TO MAKE 1 GALLON.	
COMPOSITION OF THE SEALER:	SODIUM DICHROMATE	570 grams
	CALCIUM FLUORIDE	8.6 grams
	WETTING AGENT (TERGITOL #08)	1 gram
	WATER, TO MAKE 1 GALLON.	
APPLICATION:	8 PANELS MAGNESIUM FS-1 DEGREASED WITH TOLUENE AND DRIED.	
	ALKALI CLEANED: 10 MIN. AT 100°C.	
	TAP WATER RINSE: 1 MIN.	
	PICKLE APPLICATION: 5 MIN. IMMERSION AT ROOM TEMPERATURE FOLLOWED BY 30 SEC. COLD WATER RINSE.	
	SEALER APPLICATION: (IN 2 GROUPS OF 4 PANELS EACH) 30 MIN. IMMERSION AT 200°F. FOLLOWED BY 30 SEC. COLD WATER RINSE 15 SEC. HOT WATER RINSE (80°C.) OVEN DRIED.	
	ORGANIC COATING SYSTEM: CONSISTING OF A PRIMER AND A TOP COAT	

Table 2. Treatment of magnesium surfaces with a pickling solution and dichromate sealer.

Surface Profiles

The two treatments produce different surface profiles. That these profiles are not coincidental is indicated in Figures 1 and 2, where each of the two treatments have been applied several times, without and with minor variations in the cleaning step or in the pH conditions of the treating solution. The profile studies were made with a surface analyser (Brush, Model BL-103), using the "slow" instrument speed and an attenuator setting of 0.01.

The profile charts establish that the one-step pickle treatment produces a roughened surface, and the two-step treatment provides a surface where the top peaks of the acid fluoride pickled surface have been smoothed out to a considerable extent by the "sealer" treatment. This confirms the description of this treatment as being a sealing treatment of the metal surface. The profile charts, however, do not indicate whether the smoothing out of the surface in the Dow-7 treatment is the result of a dissolving effect of the surface peaks or the result of a new deposit on the pre-roughened surface by the sealer. The answer to this question will be discussed later.

Chemical Conversion of Surfaces

The extent of surface conversion which is produced as a result of the one-step chemical treatment or the two-step treatment, can be shown by the degree of surface solubility of the treated surface.

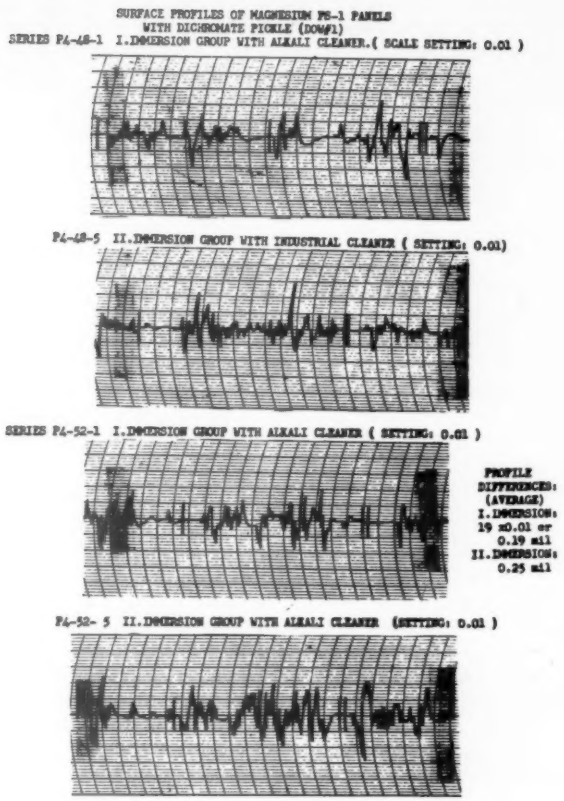


Figure 1.

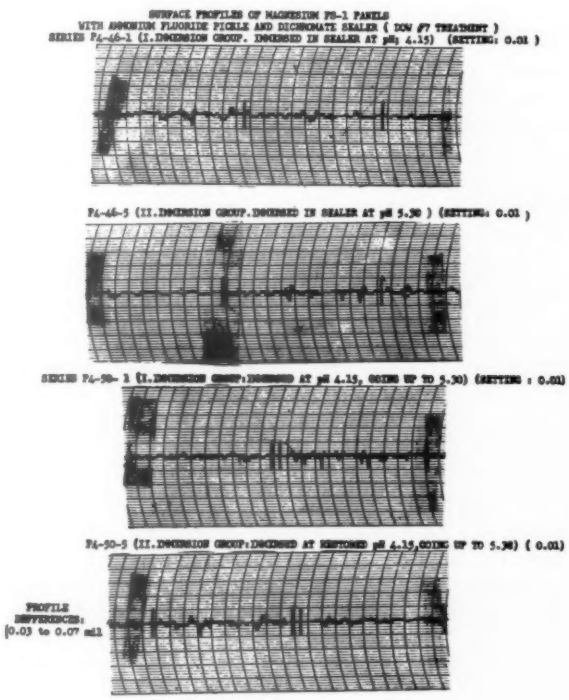


Figure 2.

This was done in this study by immersing the test panels in distilled water of measured electrical resistance; and by measuring, at given time intervals, the drop in resistance of the water, which was mechanically stirred during the tests.

Using the initial resistance of the water as 100%, the two treatments are compared as shown in Table 3. It can be seen that the drop in resistance, especially in the first 30 sec. or 60 sec. differs considerably, indicating that the "sealed" surface has been converted into a water-insoluble compound to a greater degree than the treatment described in Table 1. (See Figure 3.)

The method is described in an earlier paper by Max Kronstein, Louis F. De Long and Alfred W. Norman.[1]

That the rate of failure of a paint system applied to these two treatments also varies is shown in Table 4 where, to the treatments of Tables 1 and 2, one coat of zinc chromate phenolic modified alkyd primer and one coat of an alkyd modified nitrocellulose sea blue pigmented alkyd modified nitrocellulose lacquer have been applied and the panels exposed in the saltfog chamber for 239 hrs. This Table refers, for each of the two treatments, to "immersion groups." This means that the first 4 panels of each treatment were immersed into the freshly prepared treating solution, and the second group of 4 panels were immersed later in the already used solution, and the second group of 4 panels were immersed later in the already used solution. It can be seen from the Table that the rate of failure of the Dow-1 treated panels is greater than that of the Dow-7 treated panels. In addition, it can be seen that the rate of corrosion of the second immersion group is greater than that of the first immersion group of panels in the case of both treatments. The sealer too was used once in a freshly prepared condition and another time after pH readjustment.

Sealer as a Chromium Based Deposit

The pH of the dichromate sealer solution varies considerably during its application. An initial pH of 4.0 or 4.15 may change during the 30 min. immersion of 4 magnesium FS-1 panels, as much as to a pH of 5.30 or 5.38. The initial pH range can be restored, however, by the addition of small amounts of chromic acid. It has been noted that the life of the painted panels varies with the pH range of the sealer solution.

It was of interest, therefore, to determine what is being produced during the immersion of the pre-pickled panels in this dichromate solution. This was studied by the use of X-ray spectroscopy. By this method, the effect of the immersion of the pre-pickled magnesium panels in the sodium dichromate sealer solution of Table 2 was observed.

If the sealer acted as a remover of the high profile peaks of the pickled surface primarily, and if the observed increase of water insolubility of the surface were the result of some "gelling" effect on the magnesium surface, then the chromium ions would not be present after the cold and hot water rinses as a part of the magnesium surface, or they would be present to a small extent only. But the X-ray investigation definitely showed that the chromium matter in some form becomes an essential part of the treated surface.

This was established by comparing the x-ray spectrograph chart of the chromium area of the spectrum—between 70.5° and 68.5° of the spectrum—after the first step of the two-step treatment with that of the same area after the second step or the chromate sealer application.

The spectra are given in Figure 4 and the instrument data to these charts are given in the same Figure. They show that the surface after the pickling step did not show any chromium content; and after the sealer application the chromium line covered as much as 72 scales of a c/s full scale test. This corresponds to 72 x 32 or 2304 units. This is clearly a case of chromium matter having become a part of the metal surface as a result of the sealer treatment.

1. Paint and Varnish Production, Vol. 42, No. 12 (December 1952).

IMMERSION TIME (SECONDS)	% OF INITIAL RESISTANCE: DICHROMATE PICKLE (TABLE 1)	PICKLE AND DICHROMATE SEALER (TABLE 2)
0	100	100
30	94	99.5
60	88	99.0
90	83	99.0
120	80	98.0
180	75	92.0
240	69	86.0

Table 3. Electrical resistance measurements of the treatments in Tables 1 and 2.

Tests made using a platinum dip-type conductivity cell with a constant of 0.1 (±0.002) and a conductivity bridge having a 1000 cycle bridge source frequency.

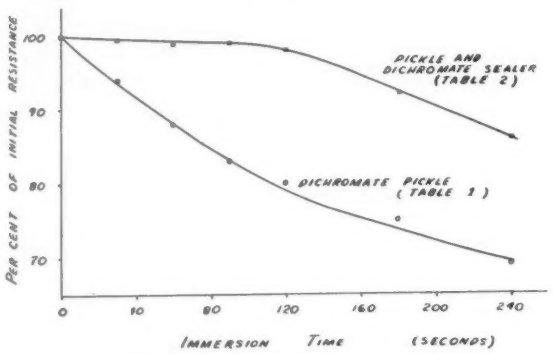


Figure 3. Electrical resistance of measurements on the treatments in Tables 1 and 2.

TREATMENT: GROUP	IMMERSION: #	PANEL: mil.	FILM: X AREA	VISUAL ANALYSIS OF THE EXPOSED PANELS: GENERAL SURFACE	EDGES	DISCONTINUED AFTER Hrs.
TABLE I. I. P4-56-	1	1.7	5mm corrosion and blisters 1mm pitting	6mm corrosion 1mm blisters	2-5mm corrosion	239
II.	3	1.65	FAILURE, PITTING THROUGH PANEL			
	5	1.65:	2-4mm corrosion and blisters	2-4mm corrosion, otherwise mostly good	good	239
	7	1.65	FAILURE BY PITTING THROUGH EDGE TO BACK			239
TABLE II. I. P4-54- (I.use of sealer)	1	1.5	1-2mm pitting 2-5mm corrosion	3-12mm corrosion 1-2mm pitting	1-4mm corrosion	309
(as #1)	3	1.45:	1-2mm pitting 2-4mm blisters	1-2mm corrosion	2-8mm corrosion	309
II. (Sealer adjusted for re-use)	5	1.5	FAILURE BY PITTING THROUGH PANEL			
(as #5)	7	1.65	1mm pitting 4mm corrosion, blisters	Three corrosion spots 2-5mm wide, rest good	3-10mm corrosion	309

Table 4. Comparative 239 hour saltfog exposure tests of panels prepared in accordance with Tables 1 and 2 and having:
a) 1 coat of zinc chromate and phenolic modified alkyd primer.
b) 1 coat of sea blue pigmented alkyd modified nitrocellulose lacquer.
The panels were prepared with X-marks

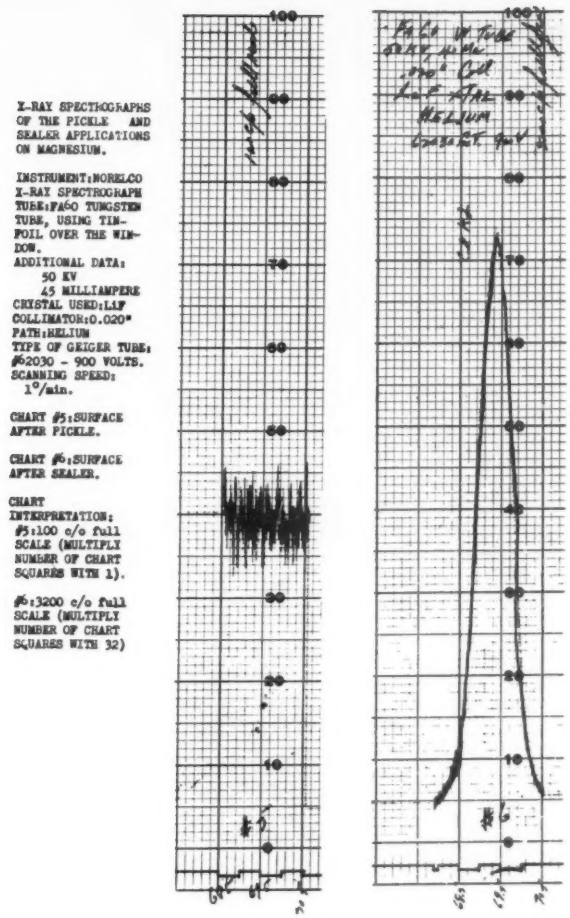


Figure 4.

The difference in profiles shown in Figures 1 and 2 between the pickled surface and the pickled and sealed surface therefore is not only the result of a dissolving effect of the 30 min. immersion bath of the sealer solution but it is also the result of a deposit which levels out the very considerable profile variations.

To understand the extent of this leveling out process it is to be understood that the distance, in mils, from the highest elevation to the deepest valley on each panel corresponds to the number of chart points multiplied by the attenuator setting, in this case, 0.01. This amounts, in the case of the pickled panel surface of one of the first immersion group shown in Figure 1, to 19 x 0.01 or 0.19 mil; or, in the case of one of the panels of the second immersion group, to 25 x 0.01 x 0.25 mil. The same values for the sealed panels of Figure 2 vary from 3 x 0.01 to 7 x .01, or from 0.03 to 0.07 mil. This gives an approximation of the effect of the sealer treatment, which is the source of the chromium peak in the x-ray spectrum also.

Sealer Deposit as a Source of Chromate Ions

Having established that the dichromate sealer treatment produces a chromium based deposit, it was of importance to find ways and means of studying whether or not this deposit could also be a source of chromate ions; that is, of ions which are supposed

TEST SOLUTION: 5% NaCl solution

TEST TIME: 3 1/2 min. (Measurements at 15 second intervals)

TREATMENTS USED:

a) FS-1 Magnesium with a 15 sec. 2% acetic acid pickle (Panel #P6-46-2)

b) A pretreated FS-1 Magnesium surface with a dichromate sealer application, completely covering the panel surface (Panel #P6-46-13)

c) A pretreated FS-1 Magnesium surface with a dichromate sealer application, but with several scratches exposing the untreated magnesium surface. (Panel #P6-46-6)

THE SHAPE OF THE TEST SPECIMEN:

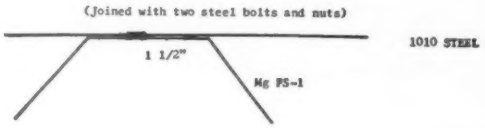


Table 5. (Series P6-46): Test change in pH

TIME (SEC.)	pH MEASUREMENTS FOR TIME OF IMMERSION		
	PANEL #2 (NO SEALER)	PANEL #13 (SEALER INTACT)	PANEL #6 (SEALER SCRATCHED TO METAL)
0	8.02	8.86	8.61
15	8.59	9.00	9.38
30	8.95	9.23	9.68
45	9.32	9.58	9.81
60	9.51	9.82	9.98
75	9.69	9.96	10.01
90	9.77	10.09	10.10
105	9.81	10.17	10.11
120	9.89	10.20	10.16
135	9.98	10.22	10.20
150	10.00	10.25	10.20
165	10.03	10.29	10.21
180	10.06	10.30	10.26
195	10.08	10.31	10.29
210	10.10	10.33	10.29
△ 210	2.08	1.47	1.68

Table 6. pH change of a solution caused by the panel immersions (Series P6-46).

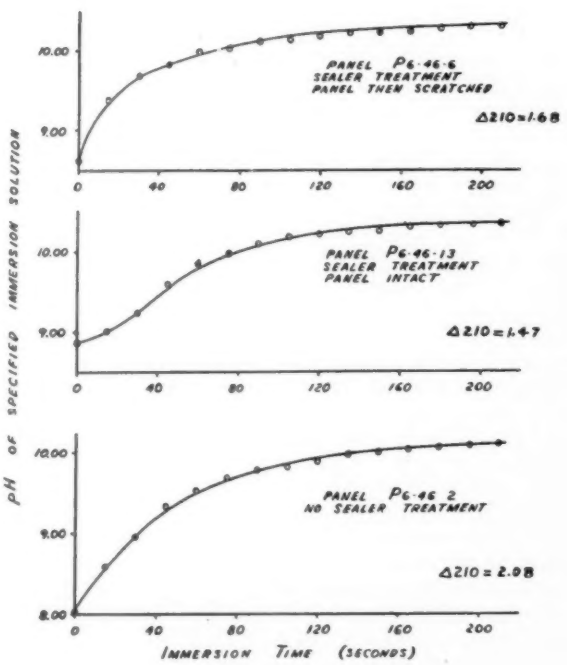


Figure 5. pH change of a solution caused by panel immersions.

to be successful inhibitor material in corrosion protection.

This study was undertaken in two ways:

1) By studying the change in pH of a salt water solution in which sealed and not sealed panels have been immersed.

(2) By applying chemicals in the immersion water which are capable of changing color in contact with chromate or dichromate ions and by measuring the change in transmittance of these solutions compared with similar solutions of known chromate content.

The Sealer Coating and Saltwater

In the immersion of a metal surface in a corrosive water solution, such as a 5% saltwater solution, two different factors are to be observed:

a) Soluble matter which is contained in the surface treatment can go into solution and can affect the pH.

b) The metal surface can produce soluble corrosion products which also may influence the pH.

Immersion tests will therefore be influenced by both factors; but when the pH measurements are being made at short time intervals, the readings for the initial time intervals show differences between soluble matter entering from the coating and actual rapid corrosion of unsealed magnesium surfaces.

In order to accelerate the effect of the saltwater immersion, on the panels, each panel was bent before a treatment was applied so as to form an exposed center of one-and-one-half inches. The magnesium was then coupled to a flat sheet of 1010 steel and was then immersed in the saltwater of known pH. Tables 5 and 6 show the results under these circumstances:

a) FS-1 magnesium without any treatment except a 15 sec. 2% acetic acid pickle.

b) A panel of the same metal having a pretreatment followed by the dichromate sealer.

c) A similar panel but with several scratches applied to the pretreatment as well as to the sealer coating, so as to expose a bare magnesium surface.

The results show that the galvanic corrosion effect of the unprotected magnesium produced a change of 2.08 in pH during the first 3.5 min. The low solubility of the sealer together with the corrosion inhibiting effect of the treated system produced in the same time interval a pH change of 1.47. When this protective system was disturbed locally by scratches through to the magnesium, the pH increased again to 1.68. In this manner the test primarily is a measurement of the degree to which the sealer inhibits corrosion. (Figure 5)

Transmittance Studies

To determine the chromate ion formation under water immersion of a dichromate sealer coating another method has been used, based on transmittance readings in the immersion water. In this method the following were studied:

a) To what extent do dichromate sealed magnesium panels of different preparation and sealer application give off chromate ions when immersed in water?

INSTRUMENT USED: Photovolt Colorimeter Model #402-E

THE CALIBRATION SOLUTION:

#1. 1.915g $Na_2Cr_2O_7 \cdot 2H_2O$ in 100 ml solution or 0.667 g Cr/100 ml

#2. Aliquot portions were diluted to:

g Cr / liter					
a	b	c	d	e	f
3.34×10^{-2}	1.67×10^{-2}	8.35×10^{-3}	5.01×10^{-3}	3.34×10^{-3}	1.67×10^{-3}

#3. Acid solution: 25ml HCl (37.5%) diluted to 200 ml

#4. Indicator solution: Saturated solution of DIPHENYL CARBAZIDE in Isopropylalcohol

#5. TEST RATIO: 2 parts (by Vol.) Chromate solution with 1 part Acid solution and 1 part Indicator solution.

Table 7. Method for measuring the chromate ions in a water solution.

TRANSMISSION READINGS (3 ml of the mixture of caromate solution, acid solution and indicator solution)
(BLANK used: Distilled water and acid solution and indicator solution in the same ratio as in the test solutions.
THE TRANSMISSION OF THE BLANK was used as the 100% transmission value)

SOLUTION:	% TRANSMISSION FILTER M 390	FILTER M 420
Blank	100%	100%
Solution #f (the most diluted solution	89.1%	84.5%
Solution #e	80.6%	71.7%
Solution #d	71.7%	60.0%
Solution #c	57.9%	43.2%
Solution #b	32.3%	19.2%
Solution #a	9.3%	2.3%

These data were plotted on the Calibration Curve (Fig. 6) and used for the extrapolation of the unknown concentrations.

Table 8. Method for measuring the chromate ions in a water solution (II).

THE PROCEDURE

Panels #1, 2, 3: Three FS-1 Magnesium panels degreased in Toluene and dried

#1 and #2: 15 sec. immersion in 2% Acetic acid with water rinse, followed by 60 sec. immersion in solution of 110g Al Cl_3 / 1 liter water, (RT.) followed by water rinse

#3: Cleaned 10 min. at 100 C in alkali cleaner of Table 1, followed by 1 min. tap water rinse.

5 min. Pickled in Ammonium Fluoride Pickle of Table 2 at Room Temperature followed by water rinse.

#1, 2, 3: 30 min. Sealer application at 200°F as in Table 2, (each group was treated with the sealer separately), followed by 30 sec. cold water rinse and 15 sec. hot water rinse (80°C)

Oven dried.

The pH of the dichromate sealer was for the various applications:

Panel #	Before	After Immersion
1	4.00	4.45
2	5.15	5.30
3	3.40	4.50

For comparison a fourth panel received a chromium deposit other than by the sealer application (P7-44) and no sealer was applied.

Table 9. Preparation of the magnesium FS-1 panels for the chromate measurements.

(Panels #P7-26 for Tests #1 and 2, P7-32 for Test #3)

b) To what extent will a chromium deposit without dichromate sealer do the same?

c) How long will the development of chromate ions continue under immersion in changing amounts of water?

The method and calibrations are shown in Tables 7 and 8.

The preparation of the panels is shown in Table 9.

The test results are shown in Table 10.

In addition, the calibration curve for the test is given in Figure 6.

The results may be described as follows:

1. The sealer produces a coating which gives off some chromate ions which might have inhibiting effects as corrosion protection.

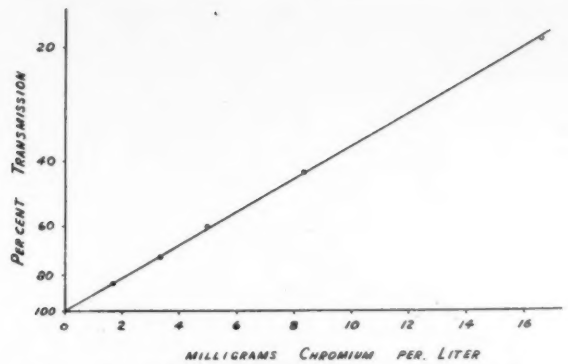


Figure 6. Calibration curve for the colorimetric determination of chromate ion.

PROCEDURE: 2 panels of each group were immersed in one liter distilled water.
1. TEST: 21 hours immersion (Water used for test acc. to Table 7/8)
II. TEST: 124 hours immersion in new water. (Water used for test)
III TEST: 191 hours immersion in new water (Water used for test)
TOTAL 336 hours

TEST #	Immersion Hours	TRANSMISSION % (Filter M420)	g Cr./liter
#1 (2 panels)			
(Sealer pH 4/4.45)	21	36.2%	10.3×10^{-3}
	21 + 124	89.6%	1.12×10^{-3}
	145 + 191	93.7%	0.56×10^{-3}
#2 (2 panels)			
(Sealer: pH: 5.15/5.3)	21	37.5%	9.83×10^{-3}
	21 + 124	89.6%	1.12×10^{-3}
	145 + 191	98.7%	0.2×10^{-3}
#3 (2 Panels)			
(Dow #7)			
(Sealer: pH. 3.4/4.5)	21	65.5%	4.09×10^{-3}
	21 + 124	78.0%	2.23×10^{-3}
	145 + 191	99.7%	0.1×10^{-3}
#4 (5 panels)	21	NO CHANGES DETECTABLE	
Chromium deposit without sealer.	21 + 124	NO CHANGES DETECTABLE	
	145 + 191	NO CHANGES DETECTABLE	

Table 10. Test results of the chromate measurements.

PANEL TREATMENT: SAME AS #3 OF TABLE 10.

LACQUER USED: CLEAR ALKYD MODIFIED NITROCELLULOSE LACQUER (MIL-L-7178) 2.4 to 2.5 mil thick.

CHROMIUM g/1 MEASURED AFTER 612 HRS. IMMERSION AND AFTER 612 + 847 HRS. IMMERSION.
(WATER CHANGED AFTER 612 HRS.)

TEST GROUP	612 hrs.	612 + 847 hrs.
Panels #1/2	0.03×10^{-3} g Cr/1	0.12×10^{-3} g Cr/1
Panels #5/6	0.04×10^{-3} g Cr/1	0.23×10^{-3} g Cr/1

Table 11. Effect of application of one coat of an organic lacquer film over treated and sealed panels on the immersion results.
(Series P7-60)

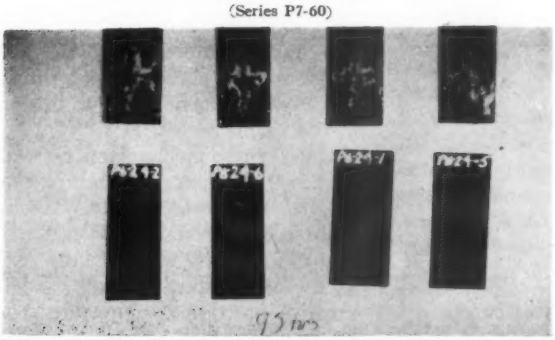


Figure 7. Results of a 95 hours saltfog exposure of an experimental magnesium pre-treatment without and with sodium dichromate sealer.
These panels have one coat of a phenolic varnish-zinc chromate primer and one coat of O. D. enamel (TT-B-485 B Type 2)
Total Organic Thickness:
Panel #1: 1.5mil #2: 2.0mil #3: 1.5mil #4: 1.6mil
#5: 1.8mil #6: 1.8mil #7: 1.2mil #8: 1.8mil

Top Row: Panels without sealer (#3, #4, #7, #8)
Bottom Row: Panels with dichromate sealer (#1, #2, #5, #6)

2. In direct contact with a considerable amount of water (1 liter for 2 panels, 2 in. x 6 in. in size), most of the soluble chromate is given off during the first 21 hrs., less is given off during the subsequent 124 hrs. in fresh distilled water, and considerably less in the third period of 191 hrs. in a third water.
3. The amount varies with the selected pickle treatment and the subsequent pH of the sealer. The 2% acetic acid pickle together with the aluminum chloride immersion produces a higher pH level, a higher amount of chromium in the first and third immersion period. The same treatment operating at a lower pH gives off somewhat less, and the first treatment of Dow-7 still less.
4. The chromium deposit without chromate sealer had no detectable chromate.

Wherein practice of an organic coating has been applied to pretreated and sealed magnesium panels, even the maximum amount of moisture which can make contact with the dichromate sealer coat is by far smaller than in the immersion test of the unpainted panel. Also the tendency of removing released chromate away from the metal surface is by far smaller. Indeed, experimental data show that the pickle and sealer treatments of panels #1 and #2, when repeated after applying an additional film of 2.4 to 2.5 mil of a clear alkyd-modified nitrocellulose lacquer (MIL-L-7178) and immersing these panels in distilled water, took 612 hours immersion before a chromium content of 0.03 to 0.04 x 10^{-3} g/lit. was detected. (Table 11). This chromium had been released from the sealer and had migrated through the lacquer into the immersion water. The remaining chromate ions would therefore still be available for a long time. (Table 11)

This is why these treatments have a very extensive inhibiting effect on the pretreated, primed and topcoated panels. To give one example (taken from a current development) Figure 7 shows magnesium FS-1 panels with an experimental pretreatment, organic primer and lacquer coating after 95 hours saltfog exposure. It also shows some additional panels all of which have the identical treatments, coatings and exposure, but which have a dichromate sealer between the pretreatment and the organic coatings. The difference here is clearly visible, showing the inhibiting effect to be expected from the results of these investigations.

Summary

It has been shown that the immersion of magnesium panels into an ammonium fluoride pickle and then into a sodium dichromate-sodium fluoride solution produces not onlv a modification of the surface profile but also a chromium based inorganic coating when measured by the X-ray spectrograph. By pH measurements, this treatment produces a corrosion inhibiting which is capable of releasing chromate ions, as measured by transmission readings. Other chromium deposits do not show this release.

Therefore, the dichromate coating can be described as an inorganic surface treatment which has, as a base for organic coating, an inhibiting effect against corrosion of the protected magnesium system.

The author continues his random reflections on various aspects of the paint industry. The opinions expressed in this column are his alone and do not necessarily reflect those of this publication.

Hats Off to Microorganisms

WHETHER the coating industry will profit by the extensive search for stereospecific polymerization catalysts is a question only time will answer. Meanwhile the Phillips Petroleum chemists can synthesize synthetic rubbers: cis-1,4-polybutadiene, trans-1,4-polybutadiene, cis-1,4-polyisoprene, the synthetic counterpart of natural rubber, and trans-1,4-polyisoprene, the counterpart of gutta percha and balata.

Other well publicized catalyzed polymerizations are those of Zeigler and his low pressure polyethylenes and those of Natta and his syndotactic polymers. In all cases, large research organizations and vast sums of money are involved in this search for catalysts capable of directing polymerization reactions stereo-specifically.

All the time I am sure that no one has forgotten that nature manages to manufacture her rubber under extremely mild conditions. Therefore, no one should be surprised to learn that rubber can be synthesized in the laboratory by biochemical means.

Quite by accident I learned that this did occur about a year ago, when a group of B. F. Goodrich scientists reported (Science *122*, 1271 (1955)) that rubber, as cis-polyisoprene, was isolated and identified from benzene extracts of sporophores of species of the genera Lactarius and Peziza. This was believed to be the first evidence of rubber synthesis by microorganisms. Unless I miss my guess it won't be the last.

Phil Heiberger

Atmospheric Disturbances

EVERY silver lining has its cloud and the "bloom" problem with varnish is not too dissimilar from the "efflorescence" problem with latex paints. An article by Norman Brommelle of the National Gallery in London, (Museum Journal (London) *55*, 262 (1956)), may shed some sunlight on these consistently reoccurring "cloud" problems.

Brommelle states that the bluish film which appears in varnished oil paintings, usually in damp weather, is most common in England. He then defines a crystalline bloom and a crater bloom with details shown by photomicrographs.

The "crystalline" bloom, which is often observed on the varnished surface, is caused by the deposition of ammonium sulfate derived from the products of coal burning in the air.

The "crater" bloom is produced on a partially hardened varnished film by the impression of minute droplets of water which after evaporation leave shallow craters in the varnish.

Could these mechanisms be similar to efflorescence in latex paints? Might the tendency to credit efflorescence to inorganic salts normally found in latex or the substrate be blinding us from considering depositions originating from contaminants in the air?

Supersonics Again?

ALTHOUGH the use of sonic devices to determine mechanical properties of high polymers has become widespread in recent years, consideration of sonics in the paint industry has been pretty well confined to possible use as a dis-

persion tool and even that on an on-again off-again basis.

But the fact that the National Bureau of Standards, as part of a larger program of research on natural and synthetic high polymers, has developed a non-destructive sonic method for testing leather may stimulate a more lively interest in sonics in the organic coatings field.

According to the May 1956 issue of *Research and Engineering*, the sonic technique "has the advantage of following the effects of aging, chemical treatments, and the like on a single specimen (of leather). Good correlation between sonic measurements and the results of tensile and breaking elongation tests (are obtainable)."

Continues R/D, "A pulse propagation meter is the chief instrument employed to measure and record the speed of a generated 3000 cy sound pulse through the letter. The experiments have shown that the velocity of sound in leather varies substantially with changes in chemical and physical structure and particularly in fiber orientation."

On Matters Literary

CHEMISTS are fond of comparing their number of years of study in preparation for career and their financial rewards thereafter with corresponding years and rewards of medical doctors. Such comparisons are always disheartening.

Here are some more statistics that may or may not be even more disheartening.

There are only about 25 periodicals, bimonthlies, and monthlies which are of direct interest to paint technologists. When you add to this the few scientific journals publishing only fundamental papers and the technical trade journals of borderline fields, you may get the grand total of roughly 40 periodicals including abstracts and digests which the technical man must subscribe to if he wishes to be well informed in his specialty. Of course there are a number of books, technical bulletins, new product announcements, house organs, and other direct mail pieces crossing our desks each day, too, but we go through these rather quickly as a rule.

Now, when you consider that the 40 periodicals rarely run to more than 800 issues per year and that each magazine contains only about 20 pages of pertinent material which may take only about 2 to 4 minutes to read per page, then all you need is about 500 to 1000 hours per year to keep up with subscriptions, or perhaps a mere 25 to 50% of your working day for reading current literature. That is, if you are a fast reader with limited interests.

I say "a mere 25 to 50%" because when you compare it to the 12,624 medical periodicals that physicians should struggle to keep tabs on, (according to Lawrence Galton's "Today's Fabulous Figures" in a recent issue of the now defunct *American Magazine*) the paint technologists' task seems a small one indeed. In this respect, we can be thankful that paint science is a comparatively young field.

More on Urea Adducts

BRITISH Patent 741,248, assigned to the German company *Badische Anilin und Soda-Fabrik*, describes a process that may lead to the separation and isolation of interesting fatty derivatives which may or may not have commercial interest. Researchers apparently developed a method of separating optical antipodes by the use of urea.

Urea, you recall, forms crystalline addition complexes, called inclusion compounds or adducts, with long straignt chain organic compounds. The adducts can be handled like ordinary crystalline precipitates and as such are easily filtered. The precipitate is readily dissociated by heating or upon dissolution in water. This reaction has been studied intensively.

For example, in semi-drying and drying oils, separation into two or more well defined fractions are well known. The more unsaturated fraction possesses improved drying properties whereas the more saturated fraction is valuable for non-paint uses such as in the manufacture of soaps, edible fats, and lubricants.

According to Patent 741,248, optical antipodes can be separated by bringing together urea with suitable racemic mixtures which form therewith inclusion compounds. In the presence of the compounds to be included, crystal lattices exist which show a spiral asymmetrical arrangement of the molecules. These lattices form inclusion compounds with the optical antipodes containing molecules of the dextro form or the laevo form, but always one of these forms is predominantly included. The two inclusion compounds may then be separated by fractional crystallization due to their different solubility. By splitting up these inclusion compounds, the dextro or the laevo rotatory antipodes in question can be recovered.

Balloons, Baubles and Things

IF you should happen to pass by your laboratory and spot your supposedly bright-eyed scientists playing with balloons, don't jump too hastily to damning conclusions.

The chances are that your lab men will be utilizing a new German technique for measuring permanent elasticity and adhesion of new coatings. It has been found that coating balloons and then by a series of expansions and deflations, a measure of permanent elasticity is obtained.

W. Pragst in Farbe u. Lack 62, 59-62 (1956) describes an instrument in which paints or lacquers are applied to a rubber balloon mounted on a support similar to that used for a terrestial globe. The balloon is connected to a small rubber bellows and a hand bulb through rubber tubing and a T tube. The balloon is expanded by squeezing the hand bulb, and a closed system between the balloon and bellows is established by closing the stopcock in the branch of the T that leads to the hand bulb. The coated balloon is repeatedly expanded and deflated by compressing and expanding the bellows by means of a motor and gear.

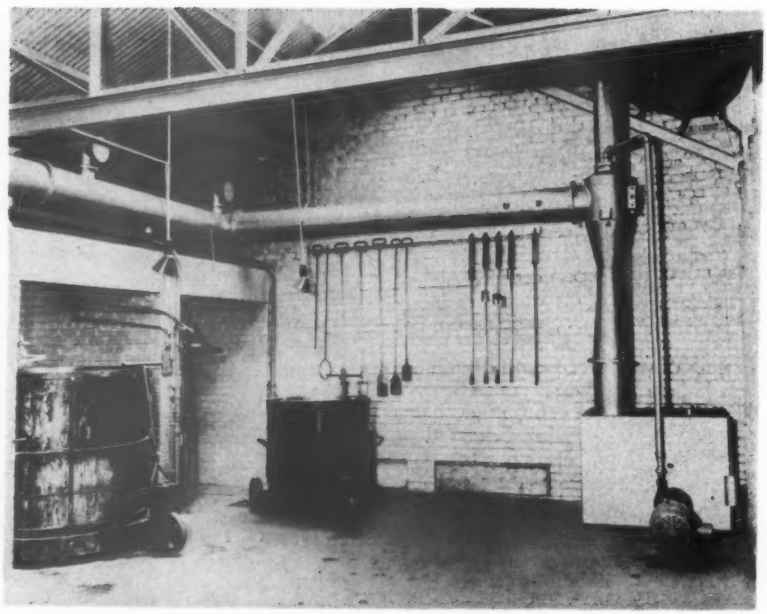
More than one paint sample can be sprayed or brushed on the test balloon. The variation of the balloon volume can be small or great by varying the length of the drive rods, and a counter is provided for the number of expansion-compression cycles. This test yields a measurement of permanent elasticity while the Erichsen test is limited to only a single extension of a film.

FUME SCRUBBERS

Controls Fumes in Varnish Cooking

WASTE control, in recent years, has received much attention from the surface coatings industry. This activity has been intensified by the trend toward local ordinances prohibiting the venting of gases and vapors to the air and state laws controlling the disposal of solid and liquid waste into streams and rivers. Recent technological trends and developments have added to the necessity for more and better waste control methods, as has the peak-production of most surface coating manufacturers.

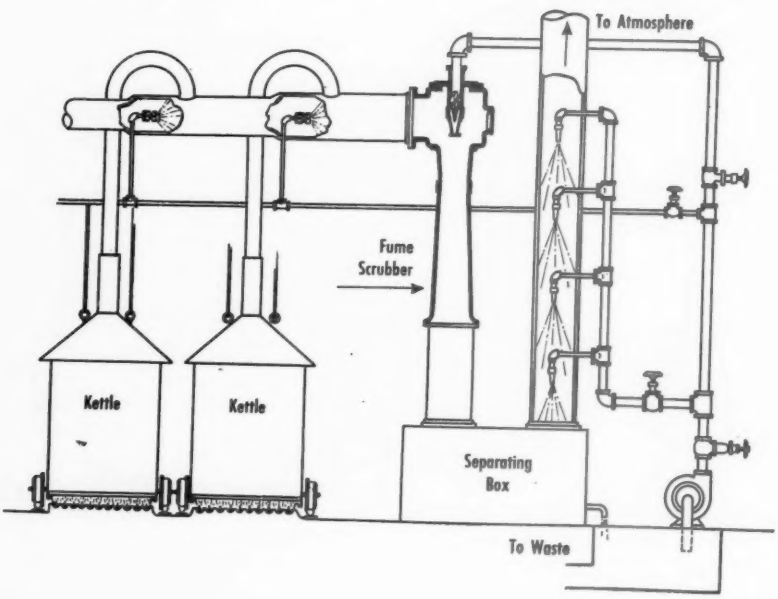
Most paints and varnishes are solutions of solids suspended in liquid vehicles. Solids are usually pigments or finely divided metal "bronzes", in the case of paints, or natural or synthetic resins, in the case of varnishes. Liquid vehicles are usually formulations of drying or semi-drying oils, volatile thinners and solvents and driers.



Fume scrubber installed at Walter Boysen Paint Co., Ashland, Calif.

In the manufacture of varnish, natural or synthetic resins are reacted with oils and other ingredients by "cooking." This operation improves the dry hardness, toughness, and drying characteristics of the finished product. Solvents are used to affect a homogeneous compound. These solvents are usually volatile liquids possessing a boiling range between

(Turn to page 84)



Sectional diagram showing a typical fume scrubber set-up for scrubbing varnish fumes. Spray nozzles installed at each juncture of collecting lines and main prevent possible flame propagation between the kettles.

Mattiello Lecture • Panel Discussions • Color Forum

FEATURED AT 34th FEDERATION MEETING

CLOSE to 3,000 paint technologists convened in Cincinnati October 22-24th to discuss various aspects of technical problems and developments relating to the coatings field to get first hand information on new raw materials and equipment used in the manufacture of paints and allied products.

Mattiello Lecture

A highlight of this meeting was the presentation of the Joseph J. Mattiello Lecture delivered by Maurice Van Loo, director of paint research at The Sherwin-Williams Co. His topic was "Physical Chemistry of Paint Coatings—A Constant Search". In his lecture Dr. Van Loo dwelt on the effect that vortex action of solvents have on the pigment in a paint system and in turn on the properties of the paint itself. Other points discussed included gel structure, evaporation rates of solvents and the effect of ultra-violet rays and infra-red on the durability of paint films.

In conclusion, Dr. Van Loo emphasized that demands made on coatings will become more and more severe. This will offer a greater challenge to the paint technologist in developing coatings to meet any test laid down by the user. To fulfill these demands, paint technologist must utilize new approaches encompassing the various principles of physical chemistry. Thus, new fields must be explored and our present knowledge widened in order to meet the challenge that lies ahead.

Panel Discussions

Three interesting panel discussions were presented during this three-day meeting. These dealt with "Chemical Resistant Coatings," "Production," and "Blister Proof Paints."

The discussion on Chemical Resistant Coatings was concerned with the merits of chlorinated rubber —, epoxy —, vinyl —, and synthetic rubber resin — coatings in the protection of a paper mill installation, where conditions (high moisture content, presence of harsh chemicals, steam, and heat) are such that it offers a good proving ground for testing such coatings. All panel members were in complete agreement that adequate surface preparation was a necessary requisite for optimum performance

W. J. Greco presenting background of Joseph J. Mattiello Memorial Lecture.

Maurice Van Loo delivering the 1956 Joseph J. Mattiello Memorial Lecture.

Gen. Charles E. Loucks of the National Assn. addressing Federation members.

Various aspects of production were covered by the above panel of four.

Chemical Resistant Coatings was the topic of discussion of the above panel.

Dr. Isay Balinkin of U. of Cincinnati discusses elements in color measurement.

of any corrosion-resistant coating in such an environment. Problems of application and primers were also covered in detail by the panel.

Increasing the size of plants, modernizing and increasing plant efficiency—these are some of the problems which are facing production men today. Problems relating to automation, latex paint manufacture, scheduling, increasing the horse power, and dispersion with ball and pebble mills were the chief topics discussed by the "Production" panel. Those contemplating automation in some phases of manufacturing must consider two things:—the size of the plant and number of personnel available. Automation has been successfully applied to filling, labeling and packaging operations and to some extent in tinting and let-down operations.

Those contemplating making new products such as latex paints would be wise to investigate beforehand in the laboratory the trouble that may occur during the manufacture of a latex paint. Upon completion of this investigation, a conference should be called to caution all those involved on what could happen and how to avoid any difficulties.

In latex paint production, conventional iron equipment can be used as long as it is clean and no rust is present. Other important aspects which must be considered are: temperature control, pH control, stability of the latex emulsion during pumping, grind number, and type of container to be used in packaging.

Scheduling is an important consideration in overcoming "bottlenecks" in production, and also can result in considerable savings. By planning to fill small packaged units such as ½ and 1 pints eliminates the problem of changing to other sizes. One plant has had considerable success with scheduling 75 percent of their production for filling and packaging and leaving 25 percent for "hot" orders.

To attain any degree of efficiency in production, it is axiomatic that knowledge of horsepower of the plant be available. It was pointed out that too few plants know how to use their electrical equipment to the best advantage. Many are paying for current not used. It was urged that all companies

check their present electrical systems as a means of increasing their power supply for the addition of new equipment.

Ball and pebble mills for dispersion operations continue to hold a high place in the paint manufacturing plant because such equipment is amenable to precise laboratory control.

The panel on "Blister Proof Paints" consisted primarily of a question and answer session. Conclusions drawn from this discussion were that more field work must be done in order that better blister proof paint be developed. With regard to repainting it was pointed out that all blisters be removed either by sanding, burning, or scraping in order to obtain best performance. Other factors brought out by the panel were that the wood itself is partly blamed for blisters; the merits of "breather" type paints for blister prevention; and fungicides for reducing both mildew and blistering.

Color Forum

A special feature of this 34th annual meeting was the presentation of a forum on Color Measurements which attracted an overflowing audience.

Unquestionably, one of the most interesting and enlightening talks of this meeting was given by Dr. Isay Balinkin of the University of Cincinnati on "Basic Elements in Color Measurements." Through the use of many visual demonstrations, Dr. Balinkin was able to convey to his listeners, in a simple manner, the various aspects of the phenomena of color and the factors affecting color.

He was followed by six papers dealing with various methods and instruments currently being used to measure color. Among those discussed were the General Electric Spectrophotometer, the Use of the Gardner Color Difference Meter for Production Control of Shading Operations, the Application of 'Colormaster' Differential Colorimeter for Control and Evaluation of Maintenance Paints, Color Measurement with the I.D.L. Color Eye, Visual Control of Color (The Davis-Bruning Colorimeter), and the Application of the Beckman Model DU Spectrophotometer.

SOME EXHIBITORS AT 21st PAINT SHOW

SOME EXHIBITORS AT 21st PAINT SHOW

New Officers

Officers for the coming term are:

President—Milton A. Glaser of the Chicago Club.

President-Elect—Joseph W. Tomecko, Toronto Club.

Treasurer—H. G. Scholl of the Baltimore Club.

Executive Secretary—C. Homer Flynn.

H. Kelfer and W. L. Foy were elected directors for a three-year term and R. Everitt for two years (representing the past president) and F. Weber was named director (representing the Council).

President Glaser announced that next year's Annual Meeting and Paint Industries' Show will be held in Philadelphia, October 30-November 2, 1957.

Paint Show

As usual high interest was displayed in the Paint Industries' Show as evidenced by the numerous paint technologists crowding exhibitors' booths in quest of information on new products, developments, techniques, and to discuss problems of mutual interest.

New raw materials and new techniques in formulation offered at this show are as follows:

Oils and Intermediates

Methyl linoleate based on safflower oil for alkyd production.

Methyl eleosterate for introducing tung fatty acids into the reaction.

Low-rosin unsaturated fatty acid derived from tall oil.

Chemically treated castor oil for use in urethane reactions with isocyanates.

Emulsions

Interpolymer latex for formulating interior and exterior paints.

Styrene-butadiene latex designed for baked industrial finishes on metal and for formulating metal primers.

Copolymer emulsions prepared by emulsion polymerization of highly reactive synthetic and oil based monomers designed for water-thinned flat, primer sealers, and semi-gloss paints.

Copolymers and Resin Combination

Vinyltoluene-vegetable oil copolymers.

Epoxy-Phenolic-Polyamide combination for formulating finishes

(*Turn to page 96*)

NEWS

M. A. GLASER
President

Milton A. Glaser Named President of Paint Clubs

Milton A. Glaser, Vice President and Technical Director of Midland Industrial Finishes in Waukegan, Ill., was installed as the 35th President of the Federation of Paint and Varnish Production Clubs on October 24 during the business session of the Federation's 34th Annual Meeting in Cincinnati. He assumes the presidency after having served the technical organization of the paint industry as President-Elect for one year and as Treasurer for two years.

Originally from New York City, Mr. Glaser was schooled in Massachusetts and was graduated from Tufts College in 1934 with a B.S. Degree in Chemical Engineering. In later years he did graduate work in chemistry and other sciences at the University of Chicago and at Northwestern University.

In 1936, after having served as an engineer with the Metropolitan District Commission of the Commonwealth of Massachusetts, Mr. Glaser joined Standard Varnish Works in Chicago as a chemical engineer. He was elevated to Chief Chemist in 1940 and to Director of Research one year later. He became associated with Midland Industrial Finishes in 1945 as Technical Director and has been Vice President and Technical Director since 1950.

The new president brings to the Federation's highest office more than 10 years' of service in committee work. He has been Chairman of the Standards and Methods of Test Committee (1947-1949), Program Committee (1951), and Educational Committee (1951-1953). In the latter capacity he played an important part in initiating the Federation's program to relieve the shortage of technical personnel by interesting both high school and college students in the industry as a career.

Mr. Glaser's local Club affiliation is the Chicago Paint and Varnish Production Club, of which he was President from 1945-1946. He is also a member of the American Chemical Society, the American Society for Testing Materials, the American Oil Chemists' Society, the American Society of Corrosion Engineers, and a Fellow of the American Institute of Chemists.

•

25 Years at National Lead

Hugh V. Alessandroni, assistant technical director of National Lead Company's Titanium Division research laboratories in Sayreville, N. J., has been awarded a gold watch in recognition of 25 years of company service.

Mr. Alessandroni joined the company as a research chemist in the Brooklyn Research Laboratories, upon graduation from Columbia University in 1931. He moved to Sayreville with the Titanium Division research department in 1935, was named supervisor of the pigment department in 1945, assistant director of research in 1947, manager of research in 1948, and to his present post in 1953.

Golden Gate Club Seeks Data on Rust Inhibitors

The Golden Gate Production Club of California reports that it is planning to investigate the effect of various chemical additives as rust inhibitors.

Through its spokesman, William Sawyer, the Club adds that in order to get the broadest possible survey of the additives that are available, it will welcome the receipt of information and suggestions from all interested parties, especially suppliers.

According to stipulation, the additives tested should not exceed five per cent of the paint by weight, and by definition they should not be part of the pigment. Communications for the attention of the Golden Gate Club may be addressed to: William Sawyer, c/o Pacific Paint & Varnish Co., 4th and Cedar Sts., Berkeley, Calif.

Devoe Grants Reichhold License For Epoxy Resins

Further development of the rapidly expanding epoxy plastics field was signified with joint announcement of an agreement, effective October 1, 1956, under which Devoe & Raynolds Co., Inc., has granted to Reichhold Chemicals, Inc., an epoxy resin patent license for the United States and Canada.

Reichhold, now entering the epoxy resin field through the non-exclusive license granted by Devoe, is one of the world's largest manufacturers of synthetic resins. Devoe, a division of the Chemical, Paint and Metallurgical Department of Merritt-Chapman & Scott Corp., is one of the nation's leading manufacturers of consumer paints, industrial finishes, resins and chemicals, and has been a pioneer in development of the new and widely used group of epoxy plastics.

Highly resistant to abrasion and corrosion, epoxy plastics are used extensively in surface coatings, and are being applied increasingly in such diversified industrial fields as tool and die making, electrical insulation, adhesives and laminates.

Used in paints and varnishes, epoxy resins give coated surfaces a sealed, plastic-like finish, resistant to the hardest wear. In the electric field, they are used for pottings, encapsulations and other manufactured components.

Strong lightweight tools and dies, laminated structural parts and pipe also are made from epoxy resins. Through use of the resins, different materials such as aluminum, steel, rubber, wood and glass can be bonded together without heat or pressure.

•

Interoceanic Acquires

Interoceanic Commodities Corp., a large commodity trading company, is now operating, on its own behalf, the facilities of Consumer's Soybean Mills at Lakeville, Minn.

Plant facilities are being converted to crush flaxseed and the elevator section will be used to handle oilseed and various types of grain.

Direction of the new operation will be under Mr. Ralph Hakim. He will be assisted by Larry Finch, who was retained from Consumer's Soybean Mills.

NEWS

Caroline D. Miller Speaks To Paint and Plastics Group

Caroline D. Miller, of E. I. du Pont de Nemours, was the main speaker at the first meeting for the 1956-57 academic year of the Paint, Plastics and Printing Ink Group, Philadelphia Section, American Chemical Society.

C. D. Miller

The meeting was held on November 15 at the University of Pennsylvania. Miss Miller, a physical chemist in the Fabrics and Finishes Department of du Pont, discussed "New Methods for the Study of Film Degradation and their Application to the Photo-oxidation of Alkyd Films."

Miss Miller said that by following the change in the interference colors of thin films cast on metallic surfaces, it is possible to determine, accurately and conveniently, the rates of thickness change under various conditions. If the accompanying chemical changes are measured by infra-red spectroscopy, the kinetics and mechanism of the reaction may be studied.

This experimental approach has been found highly satisfactory for the study of the degradation of a typical drying oil alkyd, Miss Miller added. She said such information is useful in predicting the suitability of a particular polymer for exterior use and in synthesizing more durable vehicles.

Caroline Miller was recently transferred to the du Pont Experimental Station in Wilmington, Del., after four years at the Marshall Laboratory in Philadelphia where she studied various problems of polymer structure. In addition to her professional activities with du Pont, she is the author of several papers and patents in other fields. Next February she expects to receive her Ph.D. from Temple University.

•

Allied Chemical Introduces

T. J. Kinsella, President of Barrett Division, Allied Chemical & Dye Corp., has announced that Barrett will initiate large-scale commercial production of phthalonitrile in the United States.

Barrett has developed a process for producing phthalonitrile in its laboratory and pilot plant facilities, and is constructing commercial scale facilities at its Edgewater, N. J. plant. Completion of the new facilities is scheduled for the summer of 1957.

Phthalonitrile is used principally in the manufacture of metallic and non-metallic phthalocyanine pigments which are widely used in inks and paints.

Reichhold Plasticenter Opened in New Jersey

The Plasticenter, an elaborate research laboratory built by Reichhold Chemicals, Inc., to develop basic information on RCI's surface coating resins and plastic materials, was officially opened on September 19.

Erected at RCI's Elizabeth, N.J. plant, the Plasticenter is housed in a separate building whose walls, ceilings, floors and partitions include a number of structural products which incorporate RCI's raw materials.

The main purpose of the Plasticenter is to test exhaustively under accurately simulated end use conditions, products made with RCI materials.

Among the extensive equipment used daily by the Plasticenter's staff of technicians and chemists there is, in the section devoted to surface coatings, a miniature paint plant, a constant-temperature room to check drying, viscosity and flexibility of paints; ovens for baking finishes; a Weather-ometer which shows within a relatively few hours the effect of months of sunlight on surface coatings; and a salt spray cabinet for research into the effect of sea air and water on paint.

A pilot plant to test and develop phenolic resins, a muller for mixing molding compositions and a miniature factory for manufacturing corrugated sheeting made with polyester resins are a few more in the long list of equipment in this large building.

NEWS

Paint and Varnish Clubs Give Grants to Students

The establishment of 10 grants-in-aid, in the sum of $250 each, to freshmen majoring in chemistry at North Dakota State College has been announced by the Federation of Paint and Varnish Production Clubs.

The program, which will get underway immediately, was approved by the Board of Directors of the Federation at a meeting in Cincinnati on September 16. The faculty of the Fargo school will select the recipients of the grants.

Through its Department of Paints, Varnishes and Lacquers, the School of Chemical Technology of NDSC has played an important role in the advancement of the coatings field as a major scientific industry. The contributions of the 350 graduates of the NDSC Paint Course to the paint industry stand as a tribute to the high standards of this institution.

The Department of Paints, Varnishes and Lacquers was initiated in 1905 by the late Dr. E. F. Ladd who served the college as Chemist-Dean-President from 1890-1921. Today, Dr. Fred S. Hultz, president; Dr. R. E. Dunbar, dean of the School of Chemical Technology; and Dr. Wouter Bosch chairman of the Paints Department give their wholehearted support to paint education.

Dr. Bosch is extremely well-known in industry. In addition to having taught all regular paint courses at the college since 1947, he has conducted special short courses for beginners, advanced students, and those specializing in maintenance coatings. This past June he conducted the first High School Chemistry Teachers Short Course which was sponsored by the Federation.

•

Elbert D. Peck, 67, Dies

Elbert D. Peck, vice president in charge of Pittsburgh Plate Glass Company's paint and brush division, died September 15 in Pittsburgh, Pa.

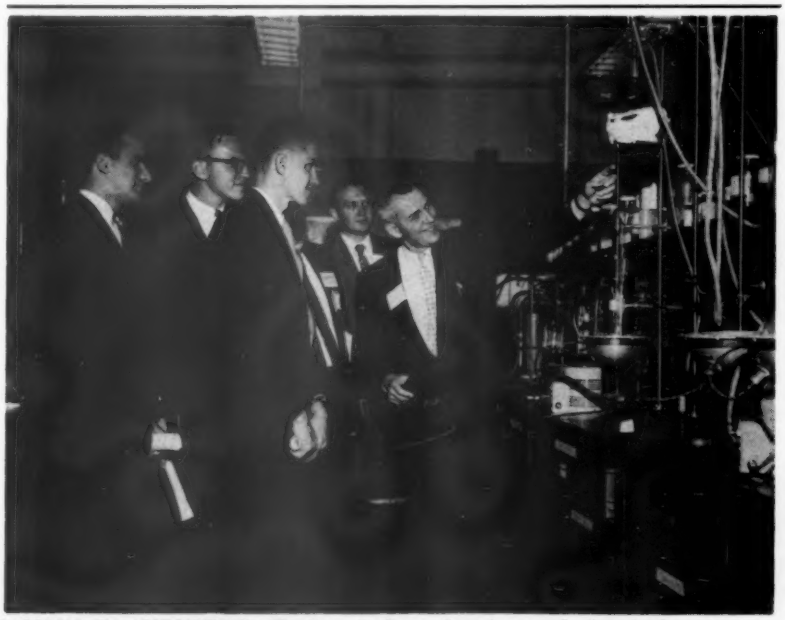
COATINGS RESEARCH GROUP: The officers of Coatings Research Group, Inc., met recently at their central research laboratory in Bethesda, Md., on a round of inspection and conferences with the Technical Director. In the above photograph, from left to right, they are: Hiram P. Ball, Ball Chemical Co,. Pittsburgh, Pa.; Byron F. Swackhamer, Yarnall Paint Co., Philadelphia, Pa.; Horace S. Felton, Felton, Sibley & Co., Inc., Philadelphia; John C. Moore, CRGI Technical Director, Bethesda, Md.; Howard Berman, Breinig Brothers, Inc., Hoboken, N. J.; and Walter C. Schwarz, Patek Brothers, Inc., Milwaukee, Wis.

8th Coating Conference

The eighth annual Coating Conference sponsored by the Technical Association of the Pulp and Paper Industry will be held in Milwaukee May 20-23, 1957. Theme of the meeting is "The Manufacturing and Processing of Coated Paper and Paperboard."

Technical papers on the conference theme and on the coating field in general will be presented. In addition, as part of the conference, there will be visits made to printing and converting plants and paper and coating mills in the Appleton, Wisc., area.

Jack E. Wilber, St. Regis Paper Co., is general conference chairman; Frank Kaulakis, Consolidated Water Power & Paper Co., is program chairman; Clark Wakefield, Titanium Pigment Corp., is local arrangements chairman; and Louis E. Georgevits, The Borden Co., Chemical Division, is publicity chairman.

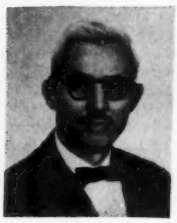


CAMPUS TO INDUSTRY: Twelve student chemists and chemical engineers, recipients of 1956-57 Archer-Daniels-Midland Co. scholarship and fellowship awards, took a special trip September 6-7 as guests of ADM. Representing 11 colleges and universities, the group explored first hand, in Minneapolis, how their campus laboratory work applies to industrial research and production. The program arranged for the students included tours of ADM plants and laboratories, lectures by ADM officials, and individual conferences.

NEWS

Minnesota Pair Gains 1956 Fatty Acid Award

Professor George W. Preckshot of the University of Minnesota and research engineer Jay Nouri have won the 1956 Fatty Acid Award of $500, according to an announcement by the American Oil Chemists' Society.



G. W. Preckshot

Jay Nouri

The Award, sponsored by the Fatty Acid Producers' Council, a division of the Association of American Soap & Glycerine Producers, Inc., is made each year to recognize and encourage research leading to new or improved products based on fatty acid chemistry.

Dr. Preckshot's and Mr. Nouri's award-winning research has produced new data on the solubilities and phase diagrams for oleic, palmitic, and stearic acids, as well as various mixtures of them in the chlorinated solvents, ethylene dichloride, trichlorethylene, and carbon tetrachloride. It also suggests a cycling system which is said theoretically to produce pure palmitic and pure oleic from any mixture of the two.

The information is timely since solvent processes utilizing other solvents have recently come into industrial use for the separation of fatty acids, and chlorinated solvents would have certain practical advantages from the industrial standpoint. In addition, the data are useful in the analysis of fats and in the laboratory preparation of pure fatty acids.

Dr. Preckshot, who resides in Minneapolis, Minn., comes from a varied background in chemical engineering. For one year during World War II, he was engaged in research and development of manufacturing processes for chemical agents at the Chemical Warfare Research and Development Laboratory at Massachusetts Institute of Technology. Then, for more than two years following this, he was concerned with planning engineering activities in China and India.

At present, Dr. Preckshot is Associate Professor of Chemical Engineering at the University of Minnesota. His research activities involve the applications of thermodynamics to various aspects of chemical engineering and he is author of a number of articles published in technical journals.

Mr. Nouri, who was born in Iran, came to the United States in 1949 and started his college work at the University of Texas. He received his B.S. degree in Petroleum Engineering from the University of Tulsa in 1954, and his M.S. degree in Chemical Engineering from the University of Minnesota in 1956.

Mr. Nouri's graduate work was sponsored by the General Mills' Research Laboratories, where he was engaged as Research engineer. He is presently employed in the Technical Development Section of E. I. du Pont de Nemours' Film Plant in Buffalo, N. Y.

•

National Chemical Grows

National Chemical & Manufacturing Co., Chicago, makers of "Luminal" brand and other paints, has purchased the Periseal Company, formerly of New York City, manufacturers of paint products for professional and industrial users.

The newly acquired company will be operated as a division of National Chemical and the products will be marketed nationally under the Periseal label to National Chemical's 5,000 dealers.

•

English Mica Addition

General Mining Associates of Baltimore, Md. have announced that The English Mica Co. of Stamford, Conn. has taken over the exclusive sale of "Micalith-G," a micaceous pigment used in metal primers and many navy specification paints.

"Micalith-G" will now be available from the local representatives of The English Mica Co.

Sherwin-Williams Expands Scholarship Program

Further expansion of its college scholarship program has been announced by the Sherwin-Williams Co.

The program, set up in 1953, was developed to encourage undergraduate interest in chemistry and chemical engineering. It is now being extended to provide opportunity for graduate study in the field of paint technology.

In line with this latter aim, a new scholarship sponsored by the firm has been established at North Dakota Agricultural College, Fargo, N. D. The undergraduate scholarships offered to senior students are being continued at Illinois Institute of Technology, Chicago; Mississippi State College, State College, Miss.; De Pauw University, Greencastle, Ind.; Lawrence College, Appleton, Wisc.; and Earlham College, Richmond, Ind.

The new grant for graduate work is limited to Sherwin-Williams employees seeking advanced degrees in paint technology. It covers direct college expenses and provides living and travel allowances.

Scholarships at the undergraduate level are in the amount of $500 annually. These are made to students who have completed three years of college work in chemistry. The scholarship and financial aid committees and the chemistry department at each school award the scholarships.

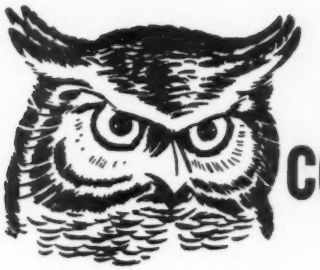
•

Canco Buys Subsidiary

American Can Co. has purchased the Bradley Container Corp. of Maynard, Mass., according to William C. Stolk, Canco president. American Can will maintain the new company as a wholly-owned subsidiary operating under the Bradley name.

The Bradley concern, formerly a subsidiary of Olin Mathieson Chemical Corp., has been primarily concerned with research and development in the plastics field. It began commercial production of tubes and bottles last year.

Mr. Stolk will serve as president of the new subsidiary. L. A. Britzke, Canco general manager of engineering, has been named vice president and general manager of Bradley.



It's wise to put all your container orders in one basket

Easy stacking ICC approved

You save time and money when you use Continental "one-stop" tailor-made package service

Why spread yourself thin writing numerous purchase orders when a word to Continental will take care of all your steel container needs! Only one man to deal with—a Continental expert who knows the needs of the petroleum industry backward and forward. Save warehouse space, reduce inventory, conserve working capital by ordering mixed cars—which can include tight head pails, pour pails, utility cans, grease pails. By getting all your lithographed items from Continental, you are assured of uniform color and quality throughout—a true package family that works for you all the way.

Continental has the tops in pouring spouts

STEEL SHIPPING DRUM (above) has 4-finger handle securely welded to top, which is offset for easy stacking. Electric lap-weld side seam. Bottom and head compound-lined and double seamed, giving a 5-thickness chime of tremendous strength. Straight sides, or beaded top and bottom. 5- and 6-gallon capacity. 24- or 26-gauge steel. Solid colors, or your own lithographed design.

DOME TOP UTILITY CAN (right)—our famous Handican®—is especially designed for re-use on the farm, at the lake, in the shop and at home. Welded side seams. Compound-lined, double seamed top and bottom. Ribbed top for strength, tinplated nozzle, pouring spout and caps. Protective coating of baked aluminum enamel. Welded-on bail handle with hand-fitting wood grip. 2½, 5 gallon and 40-lb. sizes. Plain or lithographed.

CONTINENTAL CAN COMPANY

Eastern Division: 100 E. 42nd St., New York 17
Central Division: 135 So. La Salle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4

A New Latex Binder

FOR BOTH EXTERIOR AND INTERIOR PAINTS

LYTRON* 680 is a new and unique latex binder for the formulation of Exterior and Interior emulsion paints with superior weatherability and durability . . . high resistance to chalking, blistering, and alkalinity . . . film flexibility . . . low temperature fusion . . . fast drying rate . . . and smooth, quick flow for easier application on wood and masonry. Developed by Monsanto research and evaluated for more than two years in an extensive series of field and laboratory tests, Lytron 680 is now ready for industry-wide examination.

Write for test samples and technical data on Lytron 680. Monsanto Chemical Company, Plastics Division, Room 806, Springfield 2, Mass.

Where Creative Chemistry works wonders for you

MONSANTO

*LYTRON: REG. U. S. PAT. OFF.

Better odorless paints start with

SOVASOL 35

. . . Meets the top standards for the industry!

SOVASOL 35 is an isoparaffinic of the "odorless mineral spirit" class. Its excellent odor characteristics and unusual ability to give false body in paint formulations make it ideal for use in interior protective coatings.

SOVASOL 35 is widely used in the formulation of odorless alkyd-type flats, semi-gloss and certain enamel-type interior paints for trade sales goods, where odorless paint is desired.

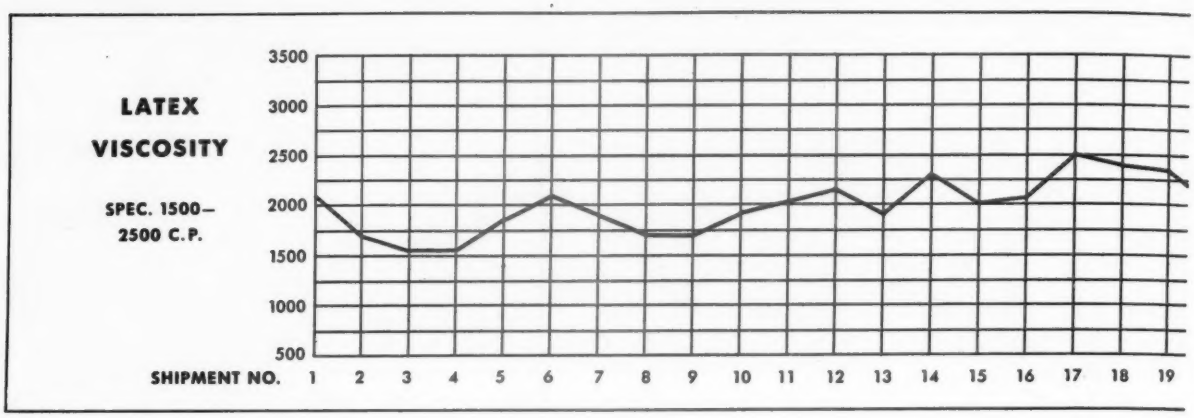
It is water white in color and passes all pertinent stability and copper corrosion tests. It is practically odorless, is doctor sweet and is relatively color stable.

For complete information about *Sovasol 35*—and how it can improve *your* products—call your Socony Mobil representative, or write the address below.

SOCONY MOBIL

OIL COMPANY, INC.

150 EAST 42nd ST., NEW YORK 17, N. Y.



another example of adherence to close

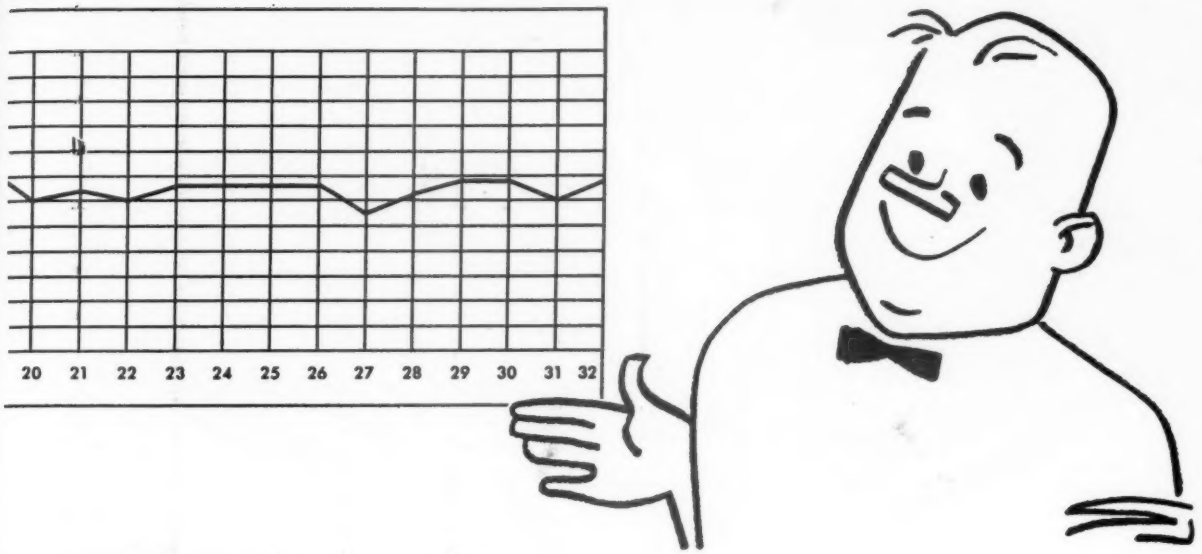
BAKELITE Brand Polyvinyl

as shown by analyses

The graph shows the Latex Viscosity of 32 tank car blends of BAKELITE WC-130 . . . not laboratory samples but actual production lots for shipment. As with all desired properties of this latex, careful quality control results in close adherence to rigid specifications. And this is assurance for the formulator that he can rely on uniform raw material.

Remember, however: not all vinyl acetate latices are alike, or so adaptable. A special advantage of WC-130 is the wide latitude you have in formulating. For example, Bakelite Company has systems based on WC-130 that will tint to all desired colors. Properly-formulated coatings will not crack over taped joints and nail holes.

If you wish to formulate easy-to-apply interior wall paints that excel in color uniformity, are quick-drying, free from brush marks and



specifications of

Acetate Latex WC-130

of actual production runs

highly washable, or finishes for texturing and other special coatings, Bakelite Company technical representatives are at your service to help you put this versatile latex to work. Call them or write for further helpful bulletins to Dept. VA-153

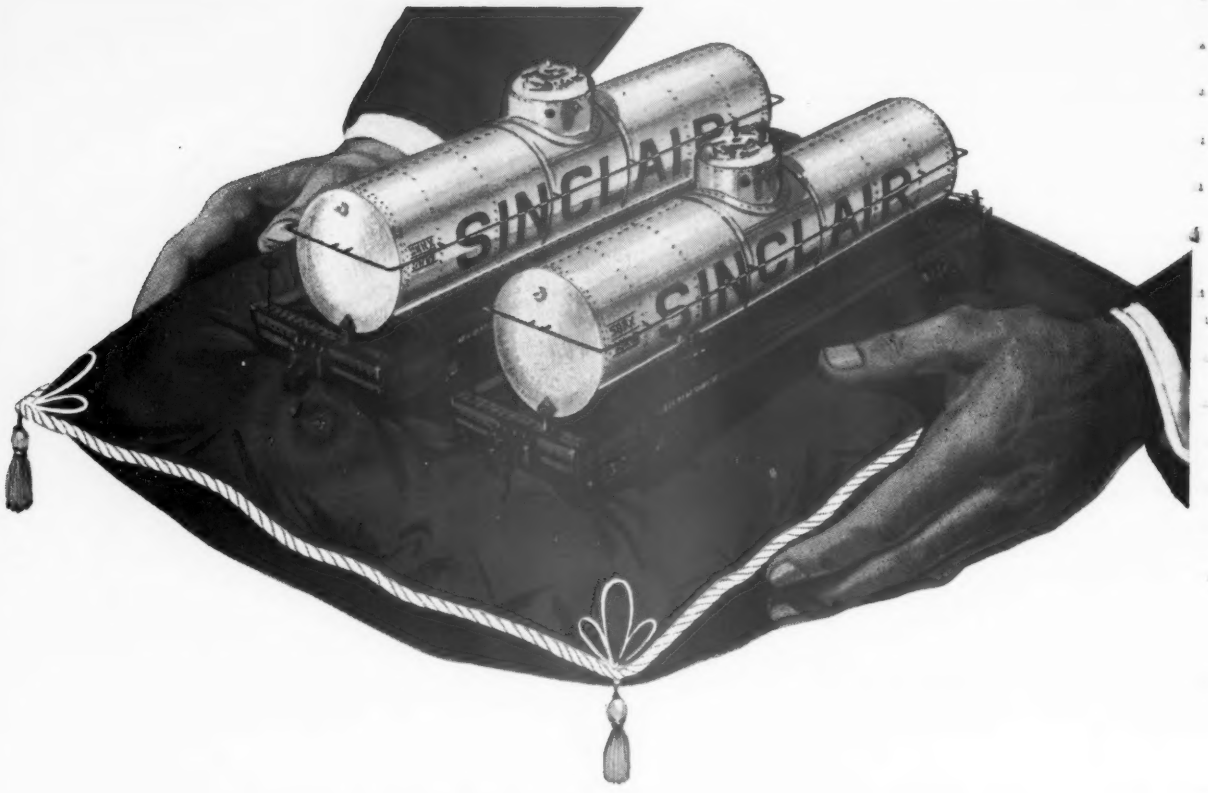
It pays to formulate with . . .

BAKELITE
BRAND
RESINS for COATINGS

BAKELITE Vinyl, Polyethylene, Phenolic, and Epoxy Resins, and Styrene and Vinyl Acetate Latices for Coatings.

BAKELITE COMPANY, *A Division of Union Carbide and Carbon Corporation* UCC 30 East 42nd Street, New York 17, N. Y.

The term BAKELITE and the Trefoil Symbol are registered trade-marks of UCC.



...SINCLAIR CHEMICALS ALWAYS RIDE FIRST-CLASS!

Two special fleets of tank cars are added assurance that you get what you pay for when you specify Sinclair! To guard against contamination, Sinclair ships odorless solvents and aromatics in separate tank car fleets used exclusively for this purpose. It saves trouble!

TRULY ODORLESS SOLVENTS – Sinclair's team of truly Odorless Solvents, both Light (340-405° F.) and Heavy (375-465° F.), are synthetically produced from carefully selected hydrocarbons to insure the uniformity, stability and superior quality required by manufacturers of odorless paints. Available in full, or split tank car quantities.

HIGH PURITY AROMATICS – Toluol (1° nitration grade), Xylol (5°), and Paraxylene (98%) are being produced by modern Udex extraction facilities at Sinclair's Marcus Hook, Pa., refinery. Available in full, or split tank car quantities.

When your manufacturing processes call for fast and reliable service, and top quality in petroleum-derived chemicals, Sinclair Chemicals, Inc. is ready to serve you. For complete information call or write to:

SINCLAIR CHEMICALS, INC.

(Affiliate of Sinclair Refining Company)

600 Fifth Avenue, New York 20, N. Y. • Phone: Circle 6-3600
155 North Wacker Drive, Chicago 6, Illinois • Phone: Financial 6-5900

NEW!

From P.V.O.'s Research and Development Division

METHYL LINOLEATES

Methyl Linoleate-ML, Bleached Methyl Linoleate-MLB, Conjugated Methyl Linoleate-ML22—All Produced From Safflower Oil

Here are some of the important advantages these new vehicles offer polymer and alkyd manufacturers.

EXCELLENT PERFORMANCE —high percentage of non-yellowing linoleic esters, practically no linolenic, low saturated fatty acid content . . . fast drying, good color retention, better flexibility.

HIGH VERSATILITY—liquid form means easier handling . . . use requires no lengthy research . . . can be used with only slight modification in place of existing raw materials . . . cuts down polyol limitations.

LOW COST —low in cost compared with fatty acids . . . will sell in same range as Safflower oil . . . prices are based on the stable Safflower oil price.

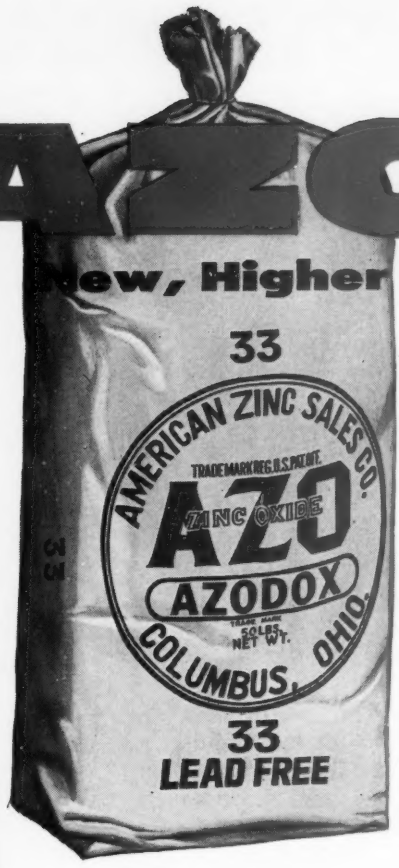
Write today for samples, details, and free booklet!

62 Townsend Street,
San Francisco 7, Calif.

AZODOX

TRADE MARK

New, Higher Density Zinc Oxide



SAVES TIME
SAVES LABOR
SAVES MONEY

AZODOX, the remarkable new de-aerated zinc oxide, cuts your costs all along the line . . . from handling through processing.

HERE'S WHY:

Twice the Density, Half the Bulk. Cuts storage space in half. Despite high density, perfect texture of material is unchanged. Small, easy-to-handle package is shaped, permitting close-packed, well-formed unitized shipments.

Increased Mixing Capacity. AZODOX increases production of both mixers and mills, cuts mixing costs. AZODOX incorporates better and faster in oil, disperses completely.

Physical Properties Unchanged Except for Density. Consistency, particle size and shape, color and all other physical properties of AZO-ZZZ, American Process, paint grade zinc oxides are unaltered. *Apparent density only is changed.* All chemical properties are unchanged. That means you can count on the same fine results batch after batch.

Flows More Freely than conventional zinc oxides. And there's less dusting loss.

See for yourself how AZODOX can cut your costs, save you money. Tested and proved AZODOX now available at no increase in price over conventional zinc oxides.

AZODOX is available in all grades of American process lead-free zinc oxide.

American Zinc sales company

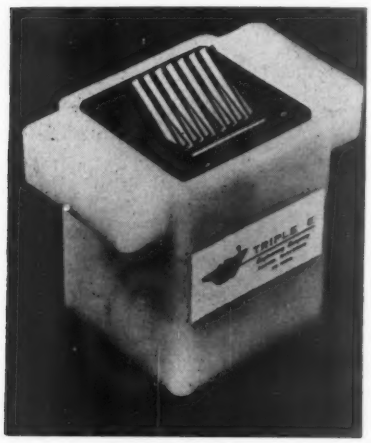
Distributors for AMERICAN ZINC, LEAD & SMELTING COMPANY

COLUMBUS, OHIO • CHICAGO • ST. LOUIS • NEW YORK

NEW MATERIALS & EQUIPMENT

A MONTHLY MARKET SURVEY

This section is intended to keep our readers informed of new materials and equipment. While every effort is made to include only reputable products, their presence here does not constitute an official endorsement.



TRIPLE-E

CODING INSTRUMENT

Can Be Installed in Conveyor

"Data-line"—coding instrument is designed to reduce marking and coding costs by 60 to 80%, according to the manufacturer.

Fifteen spring loaded carbide blades mark metal cans with a series of inconspicuous scratches as the cans pass over the blades on the conveyor line. The blades are selectively used and rapidly actuated by tightening Allen head screws on the bottom of the "Data-line." The versatile binary numbering system is employed in setting the blades to provide a wide variety of information, such as date of filling, plant, line and batch number, and type, grade or size of product. A small coding card, designed to the requirements of the individual packaging operation, can be placed alongside the scratches to translate this information at a glance. This unit becomes a part of the canning line and is installed right in the conveyor system at a transfer point.

Triple-E Engineering Co., Dept. PVP, Racine, Wisconsin.

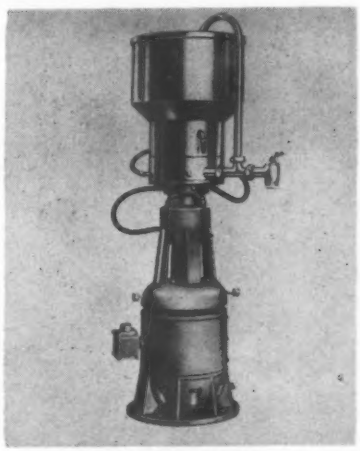
COLLOID MILL

Four-Way Blending Action

The Eppenbach colloid mill performs four distinct blending actions, although only one moving part—the rotor—is involved. This design simplicity is said to minimize the number of parts that may need to be replaced and permits field repair, reducing downtime. It also makes the mill simple to operate.

In operation, unrefined material is fed into the homogenizing zone, where upper turbine blades first subject the material to a high velocity whirling action. This breaks the slurry up into minute globules.

It then passes through adjustable clearances between the rotor and stator mechanism. The upper part of this zone contains teeth which subject the product to a mechanical shearing action. The lower part of this same area then subjects material to a further shearing action of a hydraulic type.



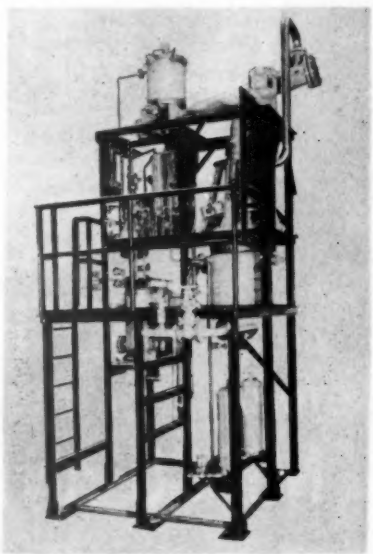
GIFFORD-WOOD

The material is then subject to a final refinement by a discharge turbine. It then passes into an outlet pipe, where it is either drawn off or fed back into the feed hopper for further refining.

The blending action can be closely controlled and regulated by a micrometer adjustment device. Temperature control of the material being processed is provided by water jackets.

These colloid mills are available in a wide range of different sizes, both laboratory and production models with processing rates ranging from ½ to 2,000 gal. per hr.

Gifford-Wood Co., Dept. PVP, Graybar Building, New York 17, N. Y.



INDUSTRIAL

PILOT PLANT UNIT

Pre-Assembled

Pre-assembled pilot plant can be shipped intact, including all valves and piping, so that it can be put into operation by connecting power and water lines, and installing the instruments (which are packed separately to prevent breakage).

Design of the unit is based on specified physical properties, such as specific gravity, viscosity, boiling point, heat of reaction, insipient reaction temperature and other laboratory data.

According to the manufacturer, both endothermic and exothermic reactions can be controlled quickly and accurately, by automatic brine

cooling and hot liquid heating systems which serve the reactor.

For complete details, write to Industrial Process Engineers, Dept. PVP, 8 Lister Ave., Newark 5, N. J.

DECYL ALCOHOL
High Purity

Primary decyl alcohol of a purity said to be previously unavailable, is being produced at the company's Texas City, Texas plant.

Due to improved production techniques, primary decyl alcohol will be sold under tighter specifications. Highlighting the specification changes are lowering of the maximum aldehyde content of the product from 0.20 per cent to 0.05 per cent and color from 15 to 10 on the platinum-cobalt scale. Each shipment is analyzed by a new control method to insure good, light-colored products made from company's primary decyl alcohol. Carbide and Carbon Chemicals Co., Dept. PVP, 30 E. 42 St., New York 17, N.Y.

LIQUID DISPERSANT
For Emulsion Paints

Company announces a new liquid, nonionic dispersant for emulsion paints, called "Surfynol TG."

The new product is said to improve hiding power in pigments, to give greater color development, and to improve color uniformity in brush-out and shelf stability.

Literature on the dispersant is available from the manufacturer. Air Reduction Chemical Co., Division of Air Reduction Chemical Co., Inc., Dept. PVP, 150 E. 42 St., New York 17, N. Y.

STERLING-FLEISCHMAN

POURING SPOUT
For Powders and Viscous Liquids

Pouring spout is specially designed to handle powder or other dry material, or viscous resinous liquids. This spout can be installed on a steel or fibre drum thus extending the pouring distance, which enables an operator to control the material during the pouring operation. Spout is constructed of ten-gauge sheet metal and features a heavy locking band which operates on the "over the center" principle.

Sterling-Fleischman Co., Dept. PVP, Broomall, Pa.

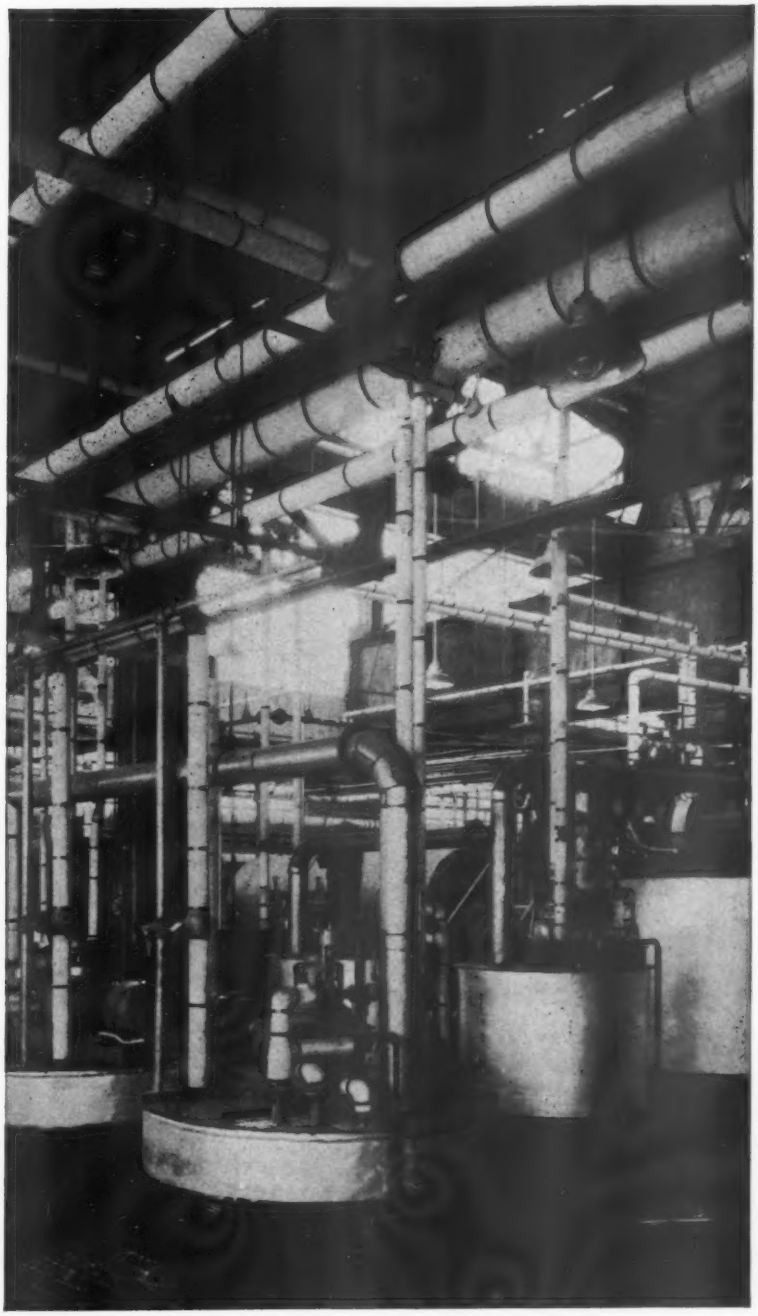
FLATTING AGENT
Diatomite Origin

"Kenite" is a fluffy powder which has application as a flatting agent or extender in paints, varnishes, lacquers, etc. According to the producer, the unique properties of this material is due to the elongated diatoms forming within the paint film a reinforcing framework. Other properties this material imparts to paints include improvement in brushing and leveling, prevention or reduction of blistering, and peeling and extension of hiding power.

Kenite Corp., Harwood Bldg., Dept. PVP, Scarsdale, N. Y.

HARSHAW DRIERS

MODERN EQUIPMENT INSURES UNIFORM HIGH QUALITY



Order your next requirement of driers from Harshaw.

Precise manufacturing specifications demand the following tests for every batch of driers produced:

Metal content
Specific gravity
Color
Viscosity
Total solids content
Flash point (TCC)
Moisture content
Acid value
Miscibility with raw linseed oil
Miscibility with mineral spirits
Benzene insoluble content
Customer's specified tests

Harshaw Driers are distributed nationwide through 18 stock points. Your order will be shipped from the nearest warehouse.

TYPICAL HARSHAW DRIERS

LIQUID DRIERS

Uversol (Naphthenate) Liquids
Linoresinate Liquids
Linoleate Liquids
Lithos
Octasols
Pastes
Pastalls

SOLID DRIERS

Uversol (Naphthenate) Solids
Linoresinate Solids
Linoleate Solids
Soyate Solids
Fused Resinates

POWDERED DRIERS

Precipitated Resinates
Drying Salts:
Cobalt Lead Manganese Zinc

YOURS FOR THE ASKING—
Harshaw's Revised 36-page Drier Book.

THE HARSHAW CHEMICAL COMPANY

Cleveland 6, Ohio

CHICAGO • CINCINNATI • CLEVELAND • DETROIT • HASTINGS-ON-HUDSON, N. Y.
HOUSTON • LOS ANGELES • PHILADELPHIA • PITTSBURGH

It's Performance That Counts!

You can rely on the performance of

*ODORLESS PHILLIPS 66 SOLTROL**

Count on Phillips, too, for dependable supply and fast deliveries in 4,000 or 8,000 gallon tank cars, or in 6,000 gallon compartment cars containing both Soltrols. Order Soltrol 130 for conventional drying characteristics, Soltrol 170 for longer wet edge. Write for FREE samples of these high quality, *odorless* thinners.

*A Trademark

ODORLESS MINERAL SPIRITS

SOLTROL

PHILLIPS PETROLEUM COMPANY
SPECIAL PRODUCTS DIVISION
BARTLESVILLE, OKLAHOMA

Hudson Red Light

NEW ADDITION TO OUR LINE OF DEPENDABLE RED PIGMENTS

HUDSON RED LIGHT
IN VINYL PLASTICS AND RUBBER

Excellent ease of dispersion
Excellent heat resistance
Excellent resistance to migration and crocking
Non-bleeding in water, dioctylphthalate, tricresyl phosphate
Fair to good fastness to light

HUDSON RED LIGHT
IN LITHOGRAPHIC, TYPOGRAPHIC, INTAGLIO INKS (TIN PRINTING AND FOOD WRAPPERS)

Excellent softness of grinding
Good baking resistance
Non-bleeding in brine, hydrocarbon solvents, alcohol
Resistant to bleeding in paraffin, fats, greases
Fair resistance to soap
Good fastness to light in fullshade and tint

HUDSON RED LIGHT
IN PAINTS

Excellent ease of dispersion
Non-bleeding in linseed oil and mineral spirits
Excellent resistance to acid
Fair resistance to alkali
Good fastness to light

We invite you to investigate the advantages of Hudson Red Light over competitive products—such as softness in grinding and fastness to light. In addition to its high tinctorial value, Hudson Red Light passes 100% through a 325 mesh sieve.

Make a practical plant trial of the dependability of Hudson Red Light for your own uses. Kindly call upon the services of our Technical Department—or our nearest sales office.

From Research to Reality

gdc gaf

GENERAL DYESTUFF COMPANY
A SALES DIVISION OF
GENERAL ANILINE & FILM CORPORATION
435 HUDSON STREET • NEW YORK 14 • NEW YORK

BOSTON · CHARLOTTE · CHATTANOOGA · CHICAGO · LOS ANGELES · NEW YORK · PHILADELPHIA · PORTLAND, ORE. · PROVIDENCE · SAN FRANCISCO · IN CANADA: CHEMICAL DEVELOPMENTS OF CANADA, LTD., MONTREAL

Investigate new Oronite Isophthalic

FOR SUPERIOR BAKING FINISHES

Consider these advantages of Isophthalic based baking resins!

1. Greater Hardness An Isophthalic based resin produced a hardness of 50% of glass as compared to a phthalic anhydride resin which gave less than 35% of the hardness of glass.

2. Thermal Stability A leading resin manufacturer has indicated that Isophthalic resins are approximately 40 times as stable to heat as comparable phthalic anhydride resins.

3. Greater Gasoline Resistance Tests have shown excellent resistance of Isophthalic baked enamels to mineral spirits and xylenes.

4. Greater Alkali Resistance This suggests Isophthalic resins for better water emulsion formulations.

For further information on this totally new raw material contact the Oronite office nearest you.

ORONITE CHEMICAL COMPANY

ORONITE CHEMICAL COMPANY

EXECUTIVE OFFICES: 200 Bush Street, San Francisco 20, California

SALES OFFICES

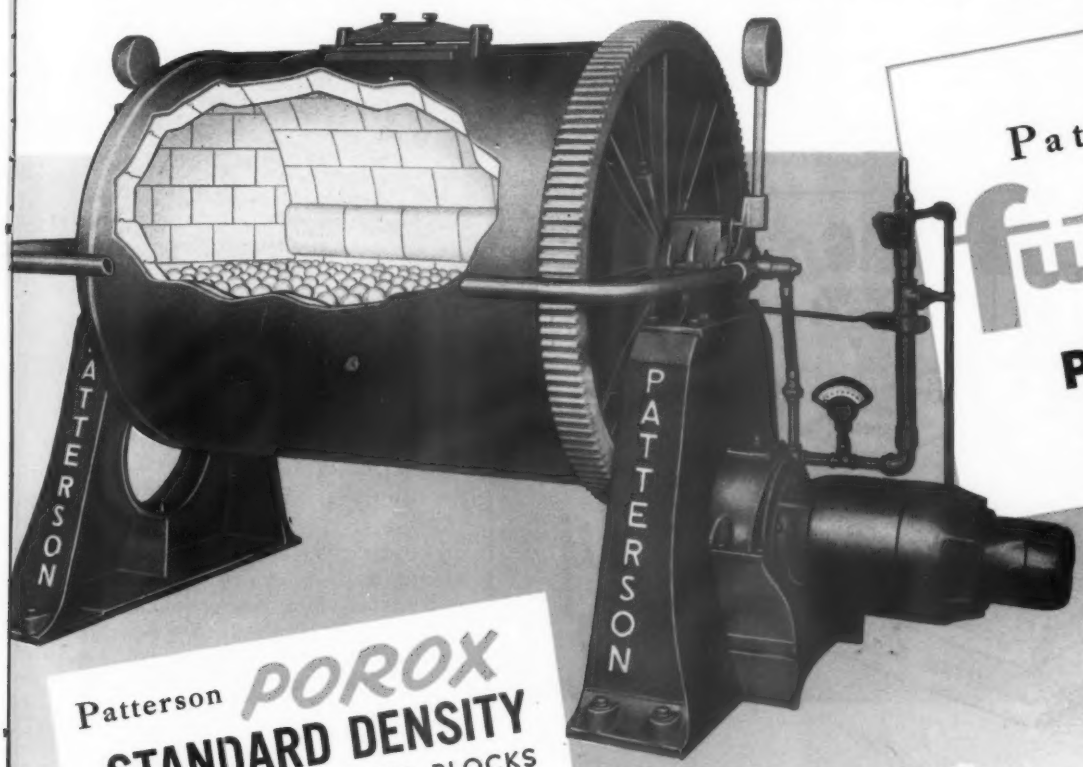
450 Mission Street, San Francisco 5, Calif. — 714 W. Olympic Blvd., Los Angeles 15, Calif.
30 Rockefeller Plaza, New York 20, N. Y. — 20 North Wacker Drive, Chicago 6, Illinois
Carew Tower, Cincinnati 2, Ohio — Mercantile Securities Bldg., Dallas 1, Texas
26 Avenue William-Favre, Geneva, Switzerland

3488

Patterson

PROVIDES *The FINEST MILL ··· The FINEST MEDIA*

FOR EVERY QUALITY GRINDING JOB!



Patterson **futura**

PEBBLE MILLS

The great new Patterson FUTURA Mill, with lining and grinding media matched to your production requirements, presents today's maximum value in profit-making grinding performance. FUTURA's new-day features include accurate temperature control at all points—inbuilt motor drive—precision-aligned bearings— 20% greater jacket area —continuous anti-corrosion water treatment— safety guard rail with motor interlock. You'll benefit by getting FUTURA's facts in detail—ask for them, today!

Richard L. Cameron
President

Patterson **POROX**

STANDARD DENSITY

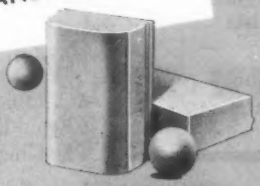
GRINDING BALLS AND BLOCKS

POROX is pure white, even-wearing, economical, dependable—ideal for the widest range of grinding jobs.

Patterson **ARLCITE**

HIGH DENSITY

GRINDING BALLS AND BLOCKS



Longer-lasting, faster-grinding high density linings and balls—first in the field, and first in favor for highest grinding speeds and efficiency. ARLCITE lasts longer over the long run!

The Patterson Foundry and Machine Compan

A Subsidiary of Ferro Corporation

East Liverpool, Ohio, U. S. A.

The Patterson Foundry and Machine Company, (Canada) Limite

Toronto, Canada

MONTREAL

NEW MATERIALS — EQUIPMENT

DMHF RESIN
Soluble in Water

Dimethyl Hydantoin Formaldehyde resin is water-white resin having a softening point of 60 deg. C. Dissolves readily in water giving solutions of low viscosity at high concentrations. Soluble in alcohols, esters, ketones, chloroform and methylene chloride. Insoluble in aromatics, ethers, trichloroethylene and carbon tetrachloride. Compatible with gelatin, dextrin, starch, polyvinyl alcohol and neutralized polymethacrylic acid. In certain proportions, it is compatible with sodium carboxymethyl cellulose, casein and zein.

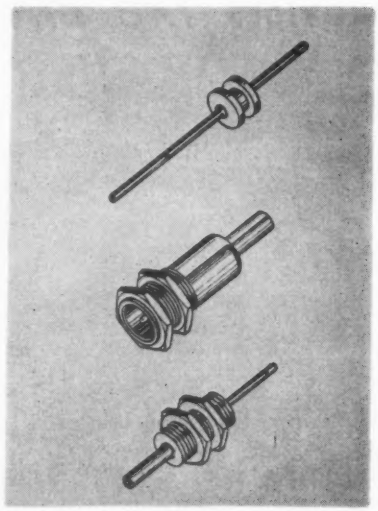
For samples and further information, contact Glyco Products Co., Inc., Dept. PVP, Empire State Bldg., New York 1, N. Y.

PVAc COPOLYMER
Low Particle Size

Polyvinyl acetate copolymer, CAL-VYN-CM-500 is said to be a very low particle size material with a majority below 0.5 microns.

This copolymer produces clear flexible films that have good adhesion, good water resistance and high wet film strength, according to the manufacturer. Designed for interior or exterior paints. Paints formulated with this copolymer are claimed to have the following properties: excellent stain removal, freeze-thaw resistance and good scrubbability.

Calvert-Mount Winans Co. Dept. PVP, Annapolis Ave., at B. & O. Railroad, Westport-Baltimore 30, Md.



BURRELL

CONNECTORS
For Lab Work

These devices are said to avoid the conventional and time consuming methods of making rubber and metal tubing connections and offer instead a means for easily making and breaking joints, adding and removing parts and stopping or renewing the flow of gases, vapors or liquids.

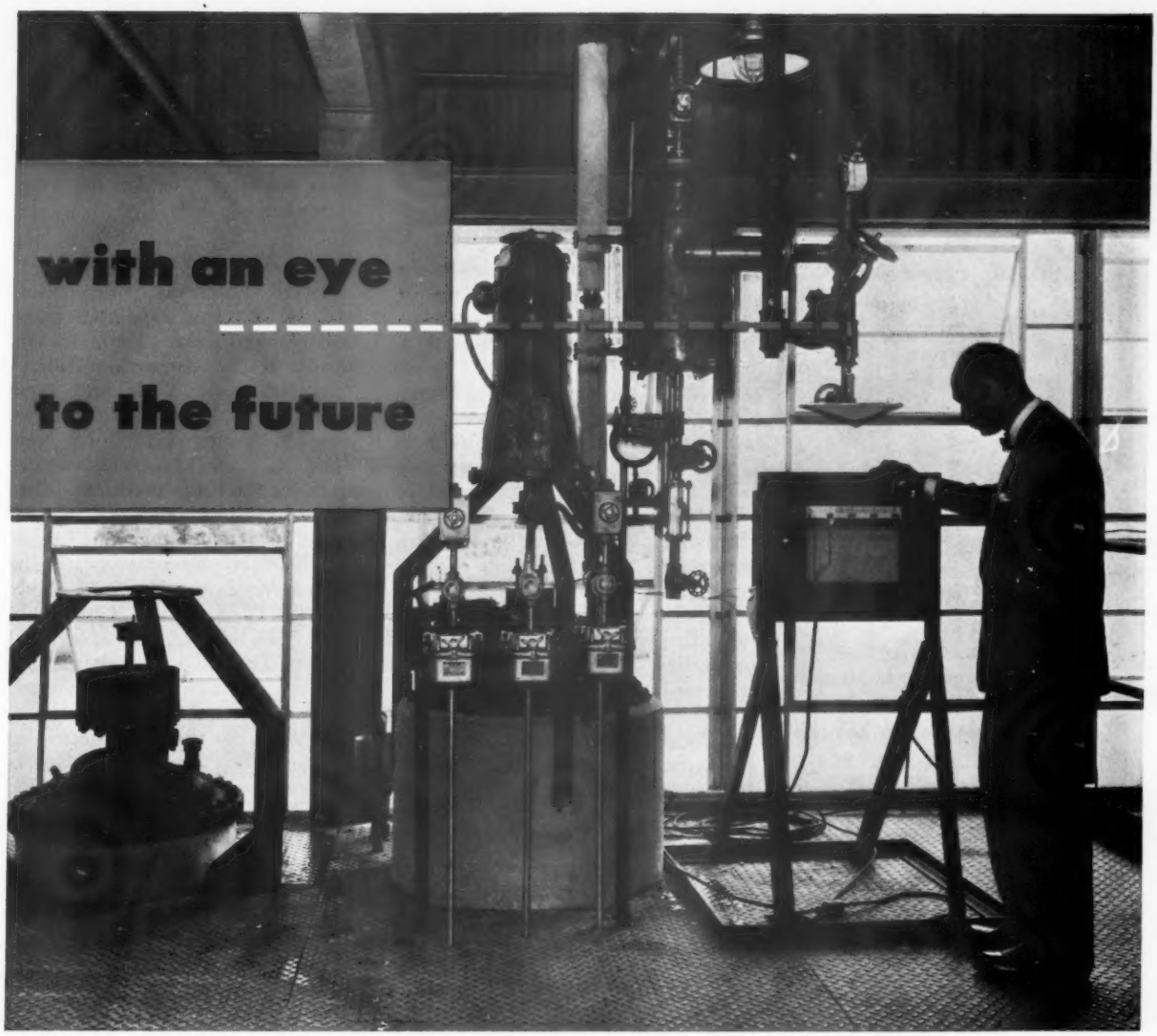
Included are group of designed glass or metal sockets, types of which can be panel-mounted.

Burrell Corp., Dept. PVP, 2223 Fifth Ave., Pittsburgh 19, Pa.

LIQUID ANTIFOAM
For Aqueous Solutions

"Nalco 71-K" is a liquid antifoam designed for control of foam in aqueous solutions. According to the manufacturers, this products offers the paint industry an effective antifoam agent for use in water base paints. The antifoam is said to be permanent, resulting in improved leveling and elimination of fish eyes when the paint is being applied.

Technical data and samples are available from National Aluminate Corp., Dept. PVP, 6268 W. 66th Pl., Chicago 38, Ill.



THE variety of formulations used commercially to produce protective coatings, growing constantly, is now much more complex than it was, even ten years ago.

Thus it becomes more and more difficult to have complete information every step of the way in manufacture and application. As new materials come into use we must know ALL about their behavior, in process as well as their results in final applications.

The Spencer Kellogg Research Program therefore emphasizes process studies as well as materials developments. Process Research is housed in its own building at the Research Center. In the photograph, Mr. George J. Hutzler, Manager of the department, is reading the temperature of a pilot plant polymerization kettle.

You will benefit from this work whenever you consult the Spencer Kellogg Technical Service Department as you plan for your own future developments. Their advice and their published bulletins include the best information to help you produce thoroughly reliable coatings.

KELLOGG'S THE TEST TELLS 1894

SPENCER KELLOGG AND SONS, INC.

BUFFALO 5, N. Y.

NEWS

Florida Site of Second Naval Stores Conference

Factors affecting the production and processing of various types of naval stores products and the consumption of these materials by a wide variety of industries were subjects of the second Naval Stores Work Conference held October 8 and 9 at the Roosevelt Hotel in Jacksonville, Fla. The conference was sponsored by the agencies of the U. S. Department of Agriculture doing work on the production, processing and utilization of gum naval stores.

At the meeting a group of outstanding speakers presented a series of talks on the production and processing of pine gum, the production of wood naval stores and pulp chemicals, and the utilization of turpentine and rosin in surface coatings, printing inks, floor coverings and plastics. Other talks were concerned with recent accomplishments in naval stores utilization research.

After each session at the conference, opportunity for general discussion was provided. Producers, processors and consumers of naval stores products attended the overall meetings.

•

Names Agents For "Kady"

Kinetic Dispersion Corp., Buffalo, N. Y., has appointed three new regional sales agents for its line of "Kady" Dispersion Mills.

In the New York and New Jersey areas, Jesse S. Young of Jesse S. Young Co., Inc., New York, N. Y., will be exclusive sales agent for the Kady products. Elsewhere, in the Rhode Island, Massachusetts and Connecticut areas, the Kady representative will be Daneel Associates, Hartford, Conn. Mr. C. D. Sampson, Cincinnati, Ohio, will be Kady agent in Cincinnati, Dayton and Indianapolis.

Kady mills are manufactured in both production and laboratory models. Very shortly Kinetic Dispersion Corp. will go into production on two new dispersion mills, under license from the Steel-Shaw Mills of England.

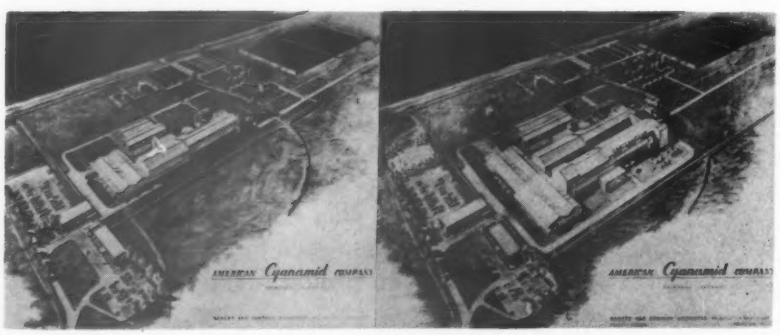
American Cyanamid Co. Expands Georgia Plant

American Cyanamid Co. will expand production to 72,000 tons annually of Unitane titanium dioxide pigment at its Savannah, Ga., plant.

It is estimated that the new facilities will be in operation by early 1958 and will require approximately 250 additional employees. The plant is located on a 1,600-acre tract.

Unitane supplies the whiteness to many different products such as paints, hard-surface floor coverings, enameled kitchen appliances, paper, white wall tires, and decorative finishes for cans and tubes.

Cyanamid's Unitane was introduced to industry in 1938, with initial production at the American Cyanamid plant in Piney River, Va. Production began at Savannah with completion of the plant in July of last year.



Artist's drawings show American Cyanamid's Savannah, Ga., plant before (left) and after (right) the expansion that will increase annual output there of Unitane titanium dioxide pigment to 72,000 tons. Facilities to be expanded include the warehouse and shipping building, manufacturing building, and storage areas for sulfuric acid and other pigment raw materials.

SEEING IS BELIEVING

DIRECTIONAL Connoisseur Chest designed by Paul McCobb

NUODEX

DLG-10 means

finer finishes with

major savings in time

For richer, finer furniture finishes, we urge you to test Nuodex Zinc Stearate DLG-10 in your lacquer sanding sealers. You will quickly recognize major advantages—in faster, more efficient processing and in richer, clearer finishes. But the gains must be seen *at work in your process* to be fully appreciated.

DLG-10 disperses easily by mixing—eliminates slow, costly grinding. DLG-10 also saves time for your customer—in finishing, because of superior sanding properties. And the big differences will show up in a finish to be proud of.

DLG-10 is but one stearate in a complete line of standard and special purpose stearates manufactured by Nuodex. Technical assistance, literature and samples are available at your request.

We invite you to take advantage of the wealth of answers offered by Nuodex. Stearates form only a segment of a long line of Nuodex Additives, extending into every field of interest to paint makers. We are ready to meet your current problems *in cooperative research with you*. Call upon this specialized Laboratory Service through your Nuodex Representative or by writing us direct.

NUODEX ADDITIVES

NUODEX PRODUCTS COMPANY... 342 MADISON AVENUE, NEW YORK 17, N. Y.

A Division of Heyden Chemical Corporation

PERSONNEL CHANGES

KOPPERS

Dr. Frank L. Jones has been appointed assistant manager of research, and **Dr. T. E. Robbins** an administrative assistant in the research department, it was announced by Dr. Paul W. Bachman, vice president and director of research and development.

Dr. Jones has served on the faculties of both Columbia U. and the City College of New York. In 1930, he accepted a fellowship at the Mellon Institute for Industrial Research, in Pittsburgh; and in 1940 was appointed director of research for the Bausch & Lomb Optical Co. He has been associated with Koppers since 1948, when he joined the company as business manager of the research department. In 1950, he was promoted to manager of the research administration section for the department. In his new position, he will continue to maintain his offices at the research laboratories at Verona, Pa.

Dr. Robbins has served in several capacities with the research department, notably as leader of the phenolic chemicals group at Verona, and since 1954, as assistant manager of the laboratory section. He also served for three years as a senior fellow in the Koppers-sponsored tar synthetics fellowship at Mellon Institute. In his new capacity, he will make his headquarters at the general offices in Pittsburgh.

Dr. Bachman also announced that **Dr. W. M. Kutz** has been named manager, polymer section; **R. S. Detrick,** manager, organic section; and **A. A. Moore,** manager business services section; all at the Verona research laboratory.

Five changes in personnel have been made by the tar products division, it was announced by R. R. Holmes, divisional vice president and general manager.

F. M. Smith, formerly superintendent of the Follansbee, W. Va., plant, has been transferred to the office of the general manager in Pittsburgh, where he will be responsible for special assignments.

R. L. Rhoades, who was assistant superintendent of the Follansbee plant, will replace Mr. Smith as superintendent.

K. R. Caldwell, who was associated with the division's Chicago plant, has been named assistant superintendent to succeed Mr. Rhoades.

J. K. Walsh of the Carrollville plant in Wisconsin has been appointed assistant superintendent of the Chicago plant, and **R. S. Suckling,** formerly with the Garwood plant in New Jersey, has been appointed superintendent of the Carrollville plant.

van AMERINGEN-HAEBLER

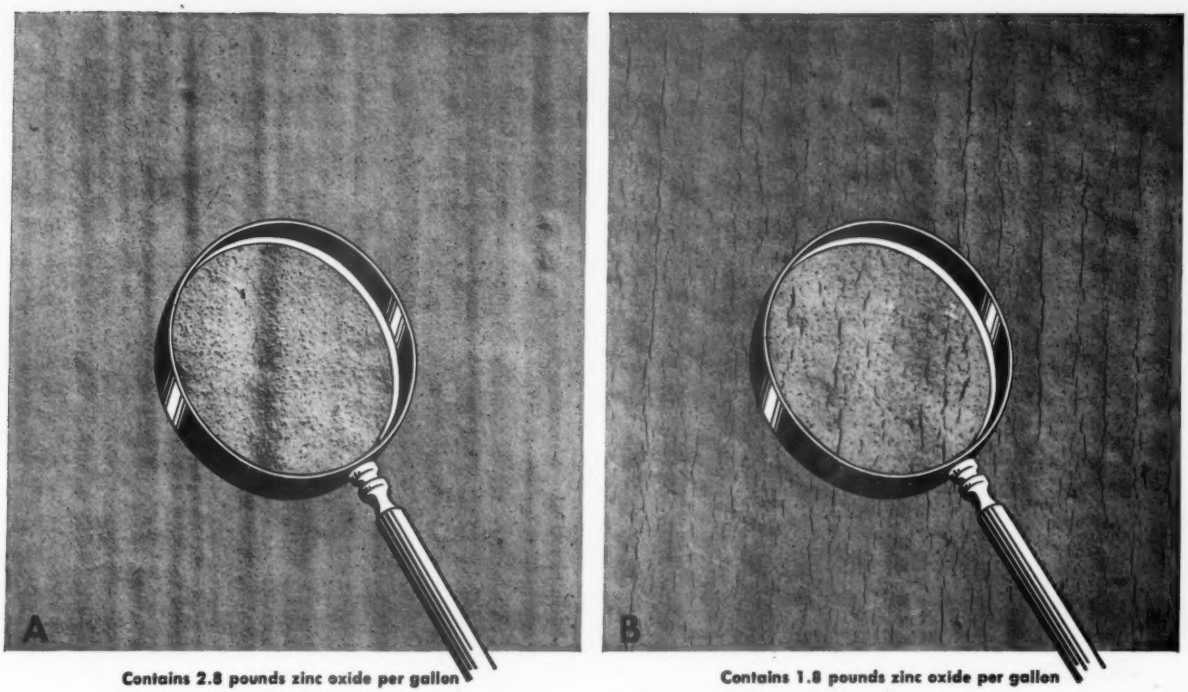
Raymond McKeefery has been appointed industrial sales manager, it was announced by Charles P. Walker, Jr., president. He has been with the company since 1952, having wide experience in the field of odor control.

R. M. McKeefery

Also announced is the reorganization of the Vandor Industrial Division to obtain greater utilization of the research and development facilities of the entire van Ameringen-Haebler organization and thus augment the equipment and staff of the Industrial Division. New equipment has been added to the Aerosol Research Laboratory, including the most modern liquefied gas manipulator, which extends the scope of the company's work in the pressurized packaged field. The entire sales force has also been integrated with the Industrial Division of the company to provide broader and quicker service to industry.

SPENCER KELLOGG

Don R. Marsh has been transferred to the position of sales representative, and will work under the direction of Thomas J. Gould, district manager of the Baltimore territory. He entered



Contains 2.8 pounds zinc oxide per gallon

Contains 1.8 pounds zinc oxide per gallon

Are you using enough ZINC OXIDE for

ADEQUATE DURABILITY?

The cedar panels above are coated with conventional (linseed oil vehicle) exterior paints of constant pigment volume concentration. Both have been tested vertically to a southern exposure for 3½ years in Central U.S.A., where cracking failures are prevalent.

The difference: the zinc oxide content in the pigment of Paint A is 2.8 pounds per gallon – in Paint B, 1.8 pounds per gallon, with inert extender added.

This test – and others made under widely varying conditions of climate and exposure–demonstrate that resistance to failure by cracking depends on adequate zinc oxide content. The unretouched photos of the panels above, clearly show the characteristic film integrity of high-ZnO paints.

The qualities imparted to any good paint by adequate quantities of zinc oxide are well known... and time-proved. In balancing a formulation, zinc oxide levels must be kept high to insure customer satisfaction. With this in mind, consider:

Are you formulating your paints for maximum possible quality?

Are you formulating your paints with enough zinc oxide?

ENOUGH ZINC OXIDE GIVES YOUR PAINT . . .

- **DURABILITY**
- Mildew resistance
- Opacity to ultra-violet light
- Tint retention
- Self-cleaning action

Technical reports are now being prepared by member laboratories of AZI on the benefits of proper zinc oxide usage. To receive copies of these reports, mail coupon.

AZI

AMERICAN ZINC INSTITUTE, INC., Dept. B
60 East 42nd Street, New York 17, N. Y.

Please send me future reports on paint formulation findings.

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

the employ of the company in 1948, and has spent recent years in several capacities in the oilseed meals division where his latest assignment was as meal sales representative for the Ohio territory.

PICCO

Maurice G. Stuffmann has joined the company's Los Angeles district sales staff. Prior to joining the Pennsylvania Industrial Chemical Corporation's technical staff in 1948 he had served in the technical service division of the floor tile and thermoplastic resin industry. Mr. Stuffmann was educated in Australia, receiving his bachelor of science degree at the University of Adelaide.

M. Stuffmann

GOODYEAR

Frank A. Mather has been assigned as special representative to the Philadelphia district of the company's chemical division, it has been announced by C. O. McNeer, general sales manager of the chemical division.

In his new assignment, Mr. Mather will work primarily in the sale of Chemigum, Pliolite, and Pliovic latices for textile applications. He will also handle sales and service requirements for the paper industry. His appointment follows an important trend by paper and textile companies in the area toward increased use of synthetic resins and latices.

MONSANTO CHEMICAL

William T. Watt has been promoted to sales manager of surface coating resins for the company's plastics division in Springfield, Mass. Mr. Watt joined Monsanto in 1950 as a sales representative in the company's Chicago district sales office, and in 1952 he was transferred to Springfield to join the product development group. Since January of this year he has been acting sales manager for surface coating resins.

W. T. Watt

MAUTZ PAINT & VARNISH

Dwain Legreid has been named branch manager for the company's Madison, Wisc., office, John Uhlarik, company spokesman, announced.

Mr. Legreid, who is originally from Madison, will direct paint sales activity in that area. Formerly, he was branch manager of Mautz' Dubuque, Iowa, branch.

PITTSBURGH PLATE GLASS

Ellis F. Farrell has been appointed assistant general manager of paint sales for the merchandising division, it has been announced by Guy Berghoff, general manager of paint sales for the division. Mr. Farrell succeeds **Richard P. Bell** who has been appointed assistant to the president.

E. F. Farrell

Prior to his appointment Mr. Farrell had served as manager of the company's Syracuse, N. Y., distributing branch during the past three years. He joined Pittsburgh Plate in 1938 as a territorial salesman for its St. Louis, Mo., distributing branch. He also served there as glass manager before his appointment in 1952 as assistant manager of the Kansas City, Mo., distributing branch. He transferred as manager for the Syracuse branch in 1953.

Peter J. Baier, Jr., has been appointed to the newly-created position of manager of transportation sales for the fiber glass division, it was announced by P. Dudley Kaley, manager of sales for the division.

In this new capacity, Mr. Baier will be located at the division's Chicago office and will be responsible for Pittsburgh Plate's transportation accounts with the railroad and trucking companies. He joined the fiber glass division at Chicago as a salesman in 1954. Prior to his association with the company, Mr. Baier had served for six years as a sales engineer for the Henry Stuckart Co., Chicago.

VULCAN CONTAINER

Charles D. Sampson, a 14 year veteran in industrial sales, has been appointed sales representative in a four state area for his company. Mr. Sampson's sales area will include Cincinnati, Dayton, and all of southern Ohio. In addition he will cover southeastern Indiana, northern Kentucky, and northern West Virginia.

C. D. Sampson

Mr. Sampson will represent both the steel pail and tin can divisions of Vulcan.

REICHHOLD CHEMICALS

H. W. Du Val has been named Eastern Sales Manager of the Chemical Division of Reichhold Chemicals, Inc.

Mr. Du Val had been with Dow Chemical Co. as industrial account executive for the past 10 years. In his new post he will concentrate on RCI's sales of chemicals and plasticizers.

ARCHER-DANIELS-MIDLAND

Ralph Bruce, assistant vice president, Archer-Daniels-Midland Co., has been appointed as manager of the firm's Linseed Division. At the same time, **Jay C. Hjortland** has been selected as sales manager of the company's packaged linseed oil department.

Mr. Bruce has been with ADM since 1937, when he started in the grain division. Last year he was elected assistant vice president and was placed in charge of ADM's flax department.

Mr. Hjortland joined ADM in 1949 and was connected with the oils shipping department until 1954. Subsequently he was promoted to sales representative for the packaged linseed oil department, servicing the midwest and southwest territories.

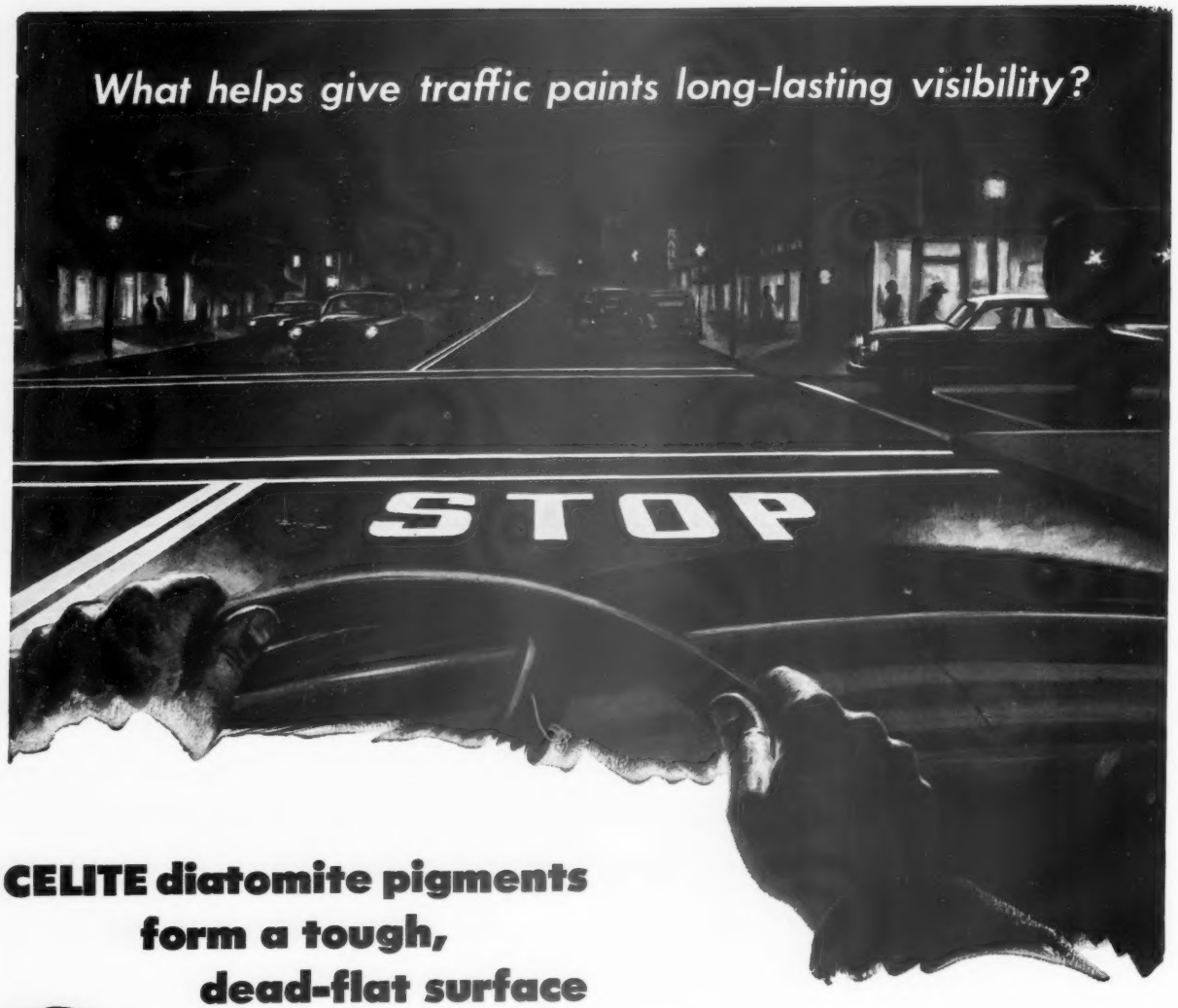
Other recent appointments in the company have been announced as follows:

James H. Kane as assistant regional sales manager for the New York and New England territories; **Howard Nissi** as manager for the Minneapolis office; **Walter C. Doscher** as manager of the Bayway plant, Elizabeth, N.J.; and **Frederick W. Walworth** as assistant to the director of linseed and marine oil sales.

CROWN CORK & SEAL

Alvan Markle III has been appointed manager of purchasing for the can division of his company. In that capacity, he will be responsible for division procurement and the sale of scrap and surpluses. His office will be located at the can division headquarters in Philadelphia.

Mr. Markle has been employed by Crown since May, 1954. Prior to his current appointment, he was purchasing agent for Crown's Philadelphia Plant #1.



CELITE diatomite pigments form a tough, dead-flat surface

Intricately shaped Celite particles, shown in photomicrograph above, project through the film to produce a highly visible textured surface.

TRAFFIC LINES are only as good as their visibility. That's why many states specify Celite in their traffic paints. These microscopic particles roughen the texture of the paint film cutting gloss and creating a flat surface that is highly visible under all conditions both day and night.

What's more, being silica, they are strong and rigid, imparting abrasion and wear resistance. Celite speeds drying by permitting the paint film to breathe. This also counteracts the usual flaking and cracking action caused by the vapor pressure of moisture coming through the concrete.

Celite particles provide better adhesion to any road surface, increase body and give good workability. For further information write Johns-Manville, Box 60, New York 16, New York. In Canada, 565 Lakeshore Road East, Port Credit, Ontario.

JOHNS-MANVILLE JM PRODUCTS

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products

Johns-Manville CELITE THE EXTENDER PIGMENT FOR ALL COATINGS

AMERICAN MINERAL SPIRITS

Allen B. Herer has been appointed Acting Manager of the company's new Mid-Atlantic Division, with headquarters at Conshohocken, Pa. At the same time, **Daniel J. Johnson** has been chosen Acting Assistant Manager.

A. B. Herer

Mr. Herer joined Amsco in 1942 as a chemist, and after serving in the army he rose through the sales ranks to his former position in charge of Amsco's sales of petroleum solvents, derivatives and chemicals in the Mid-Atlantic area.

Mr. Johnson began with Amsco as Office Manager of the company's Boston plant in 1950. He was transferred in like capacity to the Conshohocken terminal in 1952 and then became assistant in charge of office, plant and sales activities.

COLUMBIAN CARBON

Alan W. Bryant has been appointed Eastern District Manager in the Sales Department of the Carbon Black and Pigment Division of Columbian Carbon Co. His headquarters will be in Columbian's general offices in New York City.

A. W. Bryant

Mr. Bryant joined Columbian in 1955 when Columbian took over the sale of its products previously handled by Binney & Smith Co. At that time, Mr. Bryant was in charge of Binney & Smith's Boston sales office, and he was retained in that capacity for Columbian until the present promotion.

CIBA COMPANY

Anthony L. Perrin has been selected to head up his company's entry into the pigment field. While directing pigment promotion, he will continue to hold his present position as secretary of Ciba Company, Inc.

A. L. Perrin

Mr. Perrin will further Ciba's interests in the field of vat dyes and, additionally, will promote the use of a group of specialty pigments, known by the Ciba trade name "Cromophtals". The pigments are known in the coatings field and to other industries as the polyvinyl and polyethylene formulators.

REARDON COMPANY

B. D. Zmuda, formerly Research Director for The Reardon Co., St. Louis, has been promoted to a newly created position of Technical Director. Mr. Zmuda's new responsibilities will include research and development, technical service and quality control in the four Reardon plants at St. Louis, Kearny (N.J.), Los Angeles and Montreal.

Before joining Reardon in 1953, Mr. Zmuda had extensive experience in control, development and research in the paint, paper coatings and printing ink fields. He is currently a member of both the Scientific Committee and the Putty, Glazing and Caulking Technical Subcommittee of the National Paint, Varnish and Lacquer Association.

ATLAS POWDER

Adrian J. Stewart, technical representative in charge of the company's chemical sales office in Atlanta, has been transferred to its International Chemical Sales Department in Wilmington, Del.

Succeeding Mr. Stewart in Atlanta is **Robert L. Herrman, Jr.,** formerly of Atlas' Product Development Department.

EVANS RESEARCH

Leonard J. Roth, Brooklyn College; **Anthony F. Lo Monte,** Long Island University; **Edith T. Farrell,** Notre Dame College; and **Barbara G. Schiffer,** Rutgers University, have joined the staff of Evans Research and Development Corp. as junior research chemists.

NATIONAL CHEMICAL

William C. Nicoll has been appointed technical director of his company's G. J. Liebich division, which manufactures paints for consumer, professional and industrial use. Formerly executive vice president and general manager of R-Mor Paint Co., Mr. Nicoll has also served as technical director for the Illinois Paint Works, and for the industrial divisions of American Lacquer Solvents Co. and Thompson Co.

W. C. Nicoll

EMERY INDUSTRIES

Dr. H. Joseph Sharkey and **Dr. Louis M. Wise** have recently joined the research staff of Emery Industries, Inc., Dr. R. G. Kadesch, Director of Research, has announced. Dr. Sharkey will be associated with the Organic Research Section of the company, while Dr. Wise will work in the Process Research Section. The Doctors have former affiliations at Eli Lilly & Co. and at Hercules Powder Co., respectively.

H. J. Sharkey

L. M. Wise

T. W. Macy

Tom W. Macy, Jr., has been assigned as sales representative in Emery's New England territory. He will be responsible for the sale of the company's stearic, oleic, hydrogenated, animal, vegetable, and castor oil fatty acids.

Mr. Macy was previously associated with the General Electric Company's Aircraft Gas Turbine Division.

DENNIS CHEMICAL

G. J. Crowdes, formerly with the B. F. Goodrich Co., has been appointed as district manager in charge of Dennis Chemical's Ohio regional office.

The regional office, located in Cuyahoga Falls, Ohio, will service the Eastern area, including Ohio, Pennsylvania, New York and Michigan. Dennis Chemical manufactures plastisols, specialty coatings and adhesives.

F. A. White

C. B. Little

VULCAN STEEL CONTAINER

Floyd A. White, Jr. and **Charles B. Little** have been named District Sales Managers for their company, according to Gordon D. Zuck, Company President. Both men will headquarter at Vulcan's main office and factory in Birmingham, Ala.

Mr. White will have charge of the Southeastern Region for the sale of Vulcan Pails and Drums. He will be responsible for supervising district sales offices and warehouses in Tennessee, Georgia, North and South Carolina, Virginia and Florida.

Mr. Little will have charge of Vulcan's Southwestern Region. It will be his responsibility to supervise district offices and warehouses in Louisiana, South Mississippi, Texas, Arkansas and Oklahoma.

GODFREY L. CABOT

N. Dudley Steele has been promoted by the company to general production superintendent of carbon black for its Southwestern Division.

N. D. Steele

In his 24 years with Cabot, Mr. Steele has held the positions of pilot plant engineer and assistant director of research. Prior to his new appointment he was assistant general production superintendent of carbon black.

ACHESON INDUSTRIES

Dr. Harold J. Dawe, for more than a decade in charge of Research and Development at Acheson Colloids Co., Port Huron, Mich., has been appointed Technical Staff Consultant of Acheson Industries, Inc.

Dr. Dawe's new responsibilities will include the supervision of technical activities at all seven Acheson Industries plants located in the United States, England and Holland. He will maintain headquarters at Port Huron.

Until his successor at Acheson Colloids is appointed, Dr. Dawe will continue to supervise research and development for the company.

SURPASS, ALOX

Fred W. Evans has been appointed assistant to the President of Surpass Petrochemicals Ltd., Scarboro, Ont., and Alox Corporation of Niagara Falls, N. Y. He brings with him to his new post a knowledge of the chemical industry obtained, in part, through his long previous association with Hooker Electro Chemical Co., in the capacity of Supervisor of process development and research.

Mr. Evans' new duties will include the correlation of an intensified program of research and development at both the Surpass and Alox companies as well as supervision of all phases of engineering, production sales and general plant operation at Surpass.

WITCO CHEMICAL

Charles Gardner has been appointed Manager of Paint Chemical Sales for his company's Chemical Sales division. In his new position, he will be responsible for the sale and servicing of all products made by Witco for the paint industry.

C. Gardner

Mr. Gardner formerly was Manager of Drier Sales for Witco. During his more than 20 years' experience in the paint industry, he has worked as a production man, formulator, paint research chemist, technical service representative and salesman.

National Lead Company, Experimental Test Station, Sayville, Long Island, is set up to develop facts on the durability, beauty, and practicability of house paints. In existence since 1917, it now has 2½ miles of test fences, more than 30,000 active tests.

FOOLPROOF

your exterior paints with Dutch Boy® "45X"

(Basic Silicate White Lead)

TAKE IT from leading makers of exterior paints: for *uniform* performance, you need lead.

And take it from Sayville, National Lead's Experimental Test Station, "Dutch Boy" Basic Silicate White Lead "45X" *assures* uniform performance. No matter how much exposure conditions – or painting practices – vary!

Think about your white House Paints, for example.

With "45X" – Sayville tests show – you definitely improve self-cleaning. Yet, you preserve film integrity!

In tinted House Paints, you step up film durability with "45X". Also resistance to color changes! In Primers, you step up adhesion.

And so it goes!

Everytime you put "45X" into exterior paints, you improve one property or another underlying *uniform* performance.

This minimizes complaints. Saves you time. And money! You, you alone, know what it costs to run down complaints yearly. And the complaints you *don't* hear about! Even you don't know what they cost – in repeat business and good-will.

Fewer complaints—
fewer pounds of lead, too!

That's because the reactive portion of each "45X" pigment particle is concentrated at the surface. This makes proportionately larger amounts of lead *available.*

Fewer complaints, fewer pounds of lead! You just can't lose, putting "45X" in your exterior paints!

National Lead Company: New York 6; Atlanta; Buffalo 3; Chicago 80; Cincinnati 3; Cleveland 13; Dallas 2; Philadelphia 25; Pittsburgh 12; St. Louis 1; San Francisco 10; Boston 6 (National Lead Co. of Mass.). In Canada: Canadian Titanium Pigments Ltd., 630 Dorchester St., W., Montreal.

CARBIDE AND CARBON

Dr. E. J. Mills, Jr. has been assigned to the newly created staff position in charge of special technical assignments and the recruitment of technical personnel for the company's Development Department in South Charleston, W. Va. **Dr. L. F. Theiling** and **V. T. Stack** have been appointed group leaders.

Dr. Mills obtained an A.B. degree in chemistry from Cornell University and a Ph.D. from Columbia University. He joined Carbide in 1941.

Dr. Theiling obtained a B.S. degree in chemistry from Clemson A&M College and a Ph.D. from the University of North Carolina. He joined Carbide in 1950.

Mr. Stack holds a B.S. degree in chemical engineering from North Carolina State College. He worked with the sanitary engineering section of the North Carolina State Board of Health before joining Carbide in 1951.

In addition to the foregoing promotions, **Dr. George Magnus,** University of Pittsburgh, and **Dr. Everett Mailey,** University of Pennsylvania, have been selected as new Development Department personnel.

GENERAL ELECTRIC

Burton V. Coplan has been chosen as Silicon Project supervisor at General Electric's Chemical Development Department in Pittsfield, Mass.

A native of Troy, N. Y., Mr. Coplan first joined the company in 1948 at its Knolls Atomic Power Laboratory in Schenectady and served there as a supervisor in the Chemical Engineering Unit and as assistant section manager of Chemistry.

Mr. Coplan has been in the GE center in Pittsfield since June of this year. Prior to the present appointment he served as a process development specialist.

DEVOE & RAYNOLDS

J. H. Rodenbush and **J. T. Chattin** have been appointed District Managers of the recently re-aligned Eastern district in New York City and the newly established Middle Atlantic sales district in Philadelphia, respectively.

Mr. Rodenbush started with Devoe in 1952 as a salesman in Pittsburgh. He was promoted to Pittsburgh branch manager in 1955, his last previous position.

Mr. Chattin also joined Devoe as a salesman in 1952, and in that same year he became Philadelphia branch manager. In 1953 he was promoted to technical sales representative in the Eastern industrial maintenance division.

FUME SCRUBBERS

(*From page 44*)

150°F and 550°F. Commonly used solvents include alcohols, alphatic hydrocarbons, aromatic hydrocarbons, chlorinated hydrocarbons, ketones, esters and ethers.

Cooking operations in varnish manufacturing present a real problem in air pollution. The oils and low boiling solvents evaporate to the atmosphere in the process, giving off offensive and hazardous fumes. Many methods have been developed to control and eliminate these fumes, including adsorption by activated carbon and combustion by alumina and platinum alloy catalyst.

On the West Coast, where air pollution problems have attracted much attention, fumes produced by cooking varnish have been successfully eliminated by the use of fume scrubbing systems, designed and manufactured by *Schutte and Koerting Company, Cornwells Heights, Pa.* In the San Francisco area, for example, five varnish manufacturers have installed these systems and have been experiencing excellent results. It is claimed that one of the installations has been in continuous operation for over six years.

The photograph shows a typical application of this fume scrubbing system in varnish cooking operations at the Walter Boysen Paint Company, Oakland, California. Here, four varnish kettles vent off their fumes, through telescoping fume hoods and a duct system, to a 12-inch fume scrubber. As they enter the scrubber, the fumes consist of liquid particles and gases.

The rapid reaction of the water jet physically knocks down the liquid particles. Condensable fumes are removed in quantities up to their vapor pressure level at the discharge temperature. Non-condensable fumes are absorped by the scrubbing liquid. In some installations, alkalies, hypochlorites, phenols or similar chemicals are added to the recirculated water to assist in the absorption of the non-condensable gases when odors cannot be absorbed by the water alone. Discharge is made into a separator located at the base of the unit.

The 1,000 cfm fume scrubbing system recirculates the water through the system by means of a 140 gpm water pump operating with a 120 foot head. The unit is efficient and economical, the only operating cost being for water and for the power required to pump the recirculating water.

In installations such as this, spray nozzles are sometimes installed in the vent stack to further scrub vapors. When gas being handled is highly inflammable, as in the Boysen installation, atomizing nozzles are used at each junction of collecting lines and main suction lines to prevent any possibility of flame propagation between adjacent kettles.

•

LSP Ceramics Moves

LSP Industrial Ceramics Co., national sales representatives for Coors High Density Grinding Media and Coors High Density Mill Lining Brick has moved its main office in Denver to new expanded quarters. As of October 1st the headquarters' office is located at 275 Kalamath St., Denver 23, Col.

•

Shellac Franchise Given

Philip E. Calo Company, Inc., Chicago and Minneapolis, has recently been appointed exclusive sales agent for all grades of shellac manufactured by Acme Shellac Products Co., Newark, N.J.

PATENTS

Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired (to foreign countries $1.00 per copy) to the publisher.

Preservation of Water-Emulsion Paint with Haloacetamides

U. S. Patent 2,758,103. Walter A. Henson and Willard M. Westveer, Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich., a corporation of Delaware.

A water-emulsion paint composition normally susceptible to attack by microorganisms which comprises a pigment and a vehicle, and dispersed therein a haloacetamide of the formula

$$X{-}CH_2{-}\overset{\overset{O}{\|}}{C}{-}NH_2$$

wherein X is selected from the group consisting of chlorine, bromine and iodine, the haloacetamide being present in an amount sufficient to suppress the growth of microorganisms in the composition, said vehicle comprising an aqueous dispersion of a copolymer which comprises in chemical combination at least one mono-vinyl aromatic compound and a conjugated diolefin.

Sealing Composition

U. S. Patent 2,760,877. Foster J. Castner, Somerville, N. J., assignor to Johns-Manville Corp., New York, N. Y., a corporation of New York.

A sealing composition having a high yield strength comprising approximately 25 to 75% by weight of an inert filler and a product formed by heating together castor oil and an effective amount which is from at least 0.2% by weight of said oil up to the maximum capable of being dissolved in said oil of a high yield strength imparting stiffener selected from one of a group consisting of saturated and unsaturated dicarboxylic acids and anhydrides thereof having up to 12 carbon atoms and only carbon, hydrogen, and oxygen.

Paint Containing an Amino Acid From Protein

U. S. Patent 2,758,938. William A. Monterman, Berwyn, Ill., assignor to International Minerals & Chemical Corp., a corporation of New York.

A painting composition comprising a paint, ordinarily subject to skin formation, and a mixture of amino acids produced by hydrolysis of a protein with an inorganic acid, said mixture being in an amount to produce a paint composition containing between about 0.4% and about 1.1% by weight amino acid content.

Coating Compositions Comprising Metallic Dust

U. S. Patent 2,758,983. Harry A. Toulmin, Jr., Dayton, Ohio, assignor to Midland Chemical Corp., a corporation of Delaware.

A sprayable, liquid, rustproofing coating composition consisting essentially of a polymerizable blend of (1) a liquid, potentially thermosetting component which consists essentially of a reaction product of an alpha-unsaturated-alpha, beta-dicarboxylic acid and a polyhydric alcohol, with (2) from 5 to 50 parts by weight, per 100 parts of said liquid reaction product, of substantially monomeric 2-vinylpyridine, the liquid blend containing, per gallon thereof, from 5 to 18 lbs. of particles of a metal selected from the group consisting of zinc, aluminum, titanium, magnesium, zirconium and lithium having a diameter between about 0.5 and 3.0 microns.

Black Coatings for Metals

U. S. Patent 2,762,733. Peter Borghetti, Chicago, Ill., and Walter R. Cavanaugh, Detroit, Mich., assignors to Parker Rust Proof Co., Detroit, Mich., a corporation of Michigan.

A composition for producing black coatings on surfaces of steel, iron, nickel and iron-nickel alloys which comprises an aqueous acidic solution comprising as the essential coating producing ingredients 5 to 100 grams/liter of the phosphate ion, at least about 0.125% of the ferrous ion, at least about 0.1% of a first metallic ion selected from the group consisting of zinc, manganese and cadmium ions, said first ion being present in an amount sufficient to form

metallic phosphate with the major portion of said phosphate ion, about 0.0006% to 0.012% of the sulfide ion and a second metallic ion distinct from first metallic ion which forms a black sulfide and which will not oxidize the ferrous ion in said aqueous acidic solution, the total metallic ion content being greater than about 0.5%.

Wood Stain

U. S. Patent 2,762,679. Harry A. Toulmin, Jr., Dayton, Ohio, assignor to The Commonwealth Engineering Company of Ohio, Dayton, Ohio, a corporation of Ohio.

A wood-staining composition comprising (*a*) a dyestuff having the general formula

$$A-N=N-B$$

in which A represents the residue of an aromatic amino compound selected from the group consisting of aniline, 1-naphthylamino-4-sulfonic acid, 2-amino-8-naphthol sulfonic acid and p-nitroaniline, B represents the dextran molecule, and N is nitrogen, and (*b*) a liquid vehicle for said dye consisting of, by weight, about 1 to 5 parts of diethylene glycol monoethyl ether, 8 to 10 parts of methanol and 4 to 6 parts of toluol, the dyestuff being present in the composition in an amount of 2 to 10 ounces per gallon of the vehicle.

Treatment of Tall Oil Fatty Acids

U. S. Patent 2,763,638. Charles S. Nevin, Stamford, Conn., assignor to American Cyanamid Company, New York, N. Y., a corporation of Maine.

A method of improving the drying properties of a tall oil fatty acid containing from about 1 to about 12% by weight of rosin acids and from about 0.01 to about 1% by weight of slow-drying interfering materials which comprises heating the mixture with metallic zinc in an amount from about 0.05 to about 2.0% by weight of said mixture at a temperature of from about 150° to about 250° C. and distilling the resulting mixture to separate and leave behind slow drying interfering materials to obtain a tall oil fatty acid mixture possessing improved drying properties.

Oxidatively Drying Preparations

U. S. Patent 2,764,574. Gustav Widmer, Basel, and Paul Zuppinger, Binningen, Switzerland, assignors to Ciba Limited, Basel, Switzerland, a Swiss firm.

An oxidatively drying preparation in which the drying ingredient consists of a hardenable formaldehyde condensation product of an aminotriazine containing at least two NH_2-groups and a metallic drier, in which condensation product at least two methylol groups per mol of aminotriazine are etherified with allyl groups.

Using titration apparatus, technician checks acid value of UNITOL ROS.

UNITOL ROS is consistently pale in color. Typically lighter than color standard "X"

Save on Rosin Costs with UNITOL ROS

You can save substantially on rosin costs with Union's *UNITOL ROS*. This new tall oil rosin is a pine wood derivative obtained in the Kraft paper manufacturing process. It is low in cost, uniform in quality and, because there is no captive consumption, you are assured of constant supply.

In chemical and physical characteristics, *UNITOL ROS* compares favorably with gum and wood rosin. Typical analyses show a color paler than "X" and a softening point (Ring and Ball) of 85° C.

These factors, coupled with the competitive advantage of lower price, indicate that *UNITOL ROS* should have a valuable place in your manufacturing operation.

Write for samples and additional information.

A COMPLETE RANGE OF TALL OIL PRODUCTS

Union Bag-Camp is the only single source for:

Refined Tall Oil	Tall Oil Fatty Acids	Crude Tall Oil
Tall Oil Rosin	Distilled Tall Oils	Tall Oil Pitch

unitol
TALL OIL union camp PRODUCTS

Chemical Sales Division

UNION BAG-CAMP PAPER Corporation
233 BROADWAY, NEW YORK 7, N. Y.

Solution For Coating Metallic Surfaces

U. S. Patent 2,762,732. Richard I. Somers, Northville, Mich., assignor to Parker Rust Proof Company, Detroit, Michigan, a corporation of Michigan.

A method of treating the surface of a metal of the class consisting of iron, aluminum and zinc and the alloys thereof, and chemically coated metallic surfaces which comprises applying to the said surface, a solution containing as essential ingredients 40 to 90 parts by volume tertiary butyl alcohol, 10 to 60 parts by volume of a hydrocarbon solvent, up to 30 parts by volume water, and .025% to 10% chromic acid by weight of the total weight of the solution and drying a film of said solution upon the surface.

Paint Bonding Films On Ferriferous Metal Surfaces

U. S. Patent 2,762,731. Ferdinand P. Heller, Philadelphia, and Frank Palin Spruance, Jr., Ambler, Pa., assignors to American Chemical Paint Co., Ambler, Pa., a corporation of Delaware.

The method of producing a paint-bonding surface on ferriferous metal surfaces which comprises treating the clean surface with a solution containing as its essential coating producing ingredients chloride, complex fluoride and chromate radicals, the complex fluoride being from the class consisting of fluosilicate, fluozirconate, fluoborate, fluotitanate and fluostannate (calculated as ammonium fluosilicate on a fluorine basis), the pH of the solution lying between 0.8 and 5.5 and the said ingredients being present in approximately the following amounts:

Chloride (calculated as ammonium chloride).	0.05% to 17% of the solution.
Complex fluoride (calculated as ammonium fluosilicate).	0.5 part to 2.0 parts for each part of chloride but not less than 0.025% of the total solution.
Chromate (as CrO_3) . . .	0.03 to 5.0 times the amount of total chloride plus fluoride present calculated as ammonium salts.

Finger Paint Composition

U. S. Patent 2,764,496. Max R. Vogel and Bernhard J. Mellwig, Easton, Pa., assignors to Binney & Smith Inc., a corporation of Delaware.

A finger painting composition in powder form which is innocuous and washable comprising winter wheat flour, beta naphthol, sodium alginate, sodium carboxy methyl cellulose, colloidal bentonite, and a pigment.

Processing Of Wax

U. S. Patent 2,761,851. Miles Anthony Joanen, Houston, Tex., assignor to Sinclair Refining Co., New York, N. Y., a corporation of Maine.

A modified paraffin wax composition of improved resistance to blocking consisting essentially of crystalline paraffin wax having incorporated therein about 3 percent polyethylene having a molecular weight of the order of about 3,700.

Butadienoid Drying Oil

U. S. Patent 2,762,851. Anthony H. Gleason, Westfield, N. J., assignor to Esso Research and Engineering Co., a corporation of Delaware.

A polymerization process which comprises mixing 75 to 85 parts of butadiene-1,3 and 25 to 15 parts of styrene, 100 to 500 parts of an inert hydrocarbon diluent boiling between −10° C. and 200° C., 10 to 45 parts of a co-diluent selected from the group consisting of open-chain ethers having 4 to 8 carbon atoms and cyclic diethers having 4 to 8 carbon atoms wherein the two oxygen atoms are separated by at least two carbon atoms, and 1 to 3 parts of finely divided sodium; and maintaining the resulting mixture at a temperature between 25 and 95° C. until 100% conversion of the monomers is reached.

NEWS

Paint and Varnish Club Hears Research Reports

The New York Paint and Varnish Production Club met on October 4 to hear the chairmen of the active subcommittees of the Club's Technical Committee report on the accomplishments of their respective groups during the past year. The meeting was held at the Brass Rail Restaurant, 100 Park Ave., New York City.

Anthony Skett, chairman of the Technical Committee, introduced the chairmen of the subcommittees, who made the following reports:

L. A. Melsheimer, chairman of Subcommittee No. 40, reported on the data accumulated in his subcommittee's study of the hiding power of pigments. He said graphs have been drawn in which the contrast ratio is plotted against a reciprocal function of the film thickness and the pigment concentration. In addition, the subcommittee is attempting to develop a simple and brief "Hiding Index" for a number of pigments.

Chuck Spector, reporting on "Emulsion Paints," reviewed the work involved in developing a scrub test procedure which could be used as a standard test method.

Dan Whitney, reviewing the work of the "Dispersion" subcommittee, indicated that his group has arrived at an optimum ratio of pigment, alkyd resin and thinner for dispersing phthalo blue in a steel ball mill. He said it appears that there might be some striking economies resulting from their studies if preliminary work can be confirmed in pilot plant runs.

Herb Hillman, chairman of Subcommittee No. 62, reported on investigation of the "Scrubbability of Flat Wall Paints." The subcommittee's test method involves drawing down the paint being examined on black carrera glass, subjecting the film to scrubbing and noting the drop in reflectance with increasing number of scrub cycles.

Sid Levinson reviewed the progress of his subcommittee in developing a practical test method whereby various types of wall patching materials might be evaluated.

Subcommittee No. 67, tackling "Color Matching in Production," reported through its chairman, Len Davidson, that it is engaged in three aspects of the problem simultaneously. These are: (1) determining a method of force drying paints to speed up the tinting operation; (2) developing a method of casting films to give the appearance of a film applied by brush; (3) setting up a method to determine color tolerances for any given color.

Royal Brown summarized the work of Subcommittee No. 68 during the past year. That group is engaged in studying the effect of ultraviolet light on nitrocellulose lacquers and is concentrating on examining the effect of the addition of small amounts of ultraviolet absorbers to conventional lacquer formulations.

Gus Shur, reporting for Subcommittee No. 66 on "Solvents," touched on the accomplishments of his group in developing a volumetric method for measuring the evaporation rate of solvents. He also announced that his committee had recently completed work on a gravimetric method. This gravimetric method was presented in a paper at the Cincinnati convention.

Werner Klugman, chairman of the subcommittee on "Industrial Engineering in the Paint Industry," presented a paper that his group had just completed. In it the com-

mittee members evolved two systems for preparing production batch tickets without resorting to hand copying of formulae. They also reported on three types of duplicating machines which they had investigated in the course of their work.

Koppers Dedicates New Laboratory in Penna.

A new research and development laboratory of Koppers Company, Inc., was dedicated on September 18 in Kobuta, Penna.

At an informal dedication program for the new building, the Chemical Division of Koppers was host for a tour by some 50 persons through the 43,000 square feet of floor space devoted to the development for commercial use of many plastics and chemicals.

Guests saw polystyrene and polyethylene being molded into various shapes in a battery of molding machines; witnessed polyethylene being extruded into pipe and film; watched while technicians worked with plastics which expand to fit the shape of a mold; and saw work progressing on the development of new latex paints and paper coatings.

They also viewed a room in which plastics are subjected, on an accelerated basis, to weather conditions—heat, cold and artificial sunlight—in order to test their ability to stand up under all possible conditions of usage.

Other facilities in the Development Building include complete chemical and instrument laboratories, a polymerization laboratory, a machine shop, a reactor room where various types of polymers are made, and offices for supervisory personnel.

Laboratories contain complete equipment of the most modern variety for testing materials to determine their applicability under various service conditions. There are, for example, highly specialized tools for analyzing plastics and latices, such as the electron microscope, spectrophotometer and Beckman bridge.

To determine the usefulness of new materials in commercial applications, there are pipe and film extruders, a paper laminator, 70-foot long paper coater, sheet extruder, wire coater and many commercial injection molding machines.

Paints and latices are tested in this portion of the Development Lab.

There is also a device that pre-expands tiny beads of expandable polystyrene like a popper expands popcorn.

Direction of the new Development Laboratory is the responsibility of B. R. Sarchet, former Manager of the Kobuta Plant of

Koppers and now Development Manager for the Company's Chemical Division. Mr. Sarchet says that addition of the Development Laboratory at the Kobuta Plant gives Koppers one of the most completely integrated plastic-producing facilities in the country.

In building the Development Laboratory, many of Koppers' own manufactured materials were utilized. Office walls are paneled with wood, especially treated by Koppers' Wood Preserving Division to make it fire retardant. All roofing materials were furnished by Koppers' Tar Products Division. Plastic tile was used on floors where tile was desirable, and all light fixtures in the building are made from a special Koppers' Plastic designed especially for use in the lighting field.

About 200 persons, mostly scientists and technicians, are on the Development Laboratory's staff.

Ralph Craig, Paint Expert

Ralph W. Craig, 63, Leader of Technical Service—Paint and Ink Industries for Diamond Alkali Co., died September 29 in Painesville, Ohio, following a short illness.

A recognized specialist in his field, Mr. Craig delivered many lectures on paint and paint problems. He spent considerable time with technical groups affiliated with the paint industry.

Calvert-Mount Winans Co. Chooses Two Sales Agents

Calvert-Mount Winans Co., Inc. of Baltimore, Md., manufacturers of alkyd resins and polyvinyl acetate polymers, has appointed the Jesse S. Young Co., Inc., New York, N. Y., as their exclusive sales agent in the Metropolitan New York City area.

It is expected that Mr. Jesse S. Young, through his background of more than 20 years of sales and service to the protective coatings industry in this area, will be able to provide more direct service and closer liaison to Calvert-Mount Winans customers.

Additionally, Calvert-Mount Winans has given over its California sales area to the Roberts-McMillin Co., Oakland, Calif.

Bob Roberts and Mac McMillin, who head the sales company, have served the paint and allied industries in California for nearly 10 years. They will introduce Calvert-Mount Winans' varied line of products to their region on the same custom service basis as other Calvert-Mount Winans accounts enjoy.

•

Celanese Corp. Builds

To meet the increasing demand for trimethylolpropane in the rapidly growing polyurethane plastics and coatings field, Celanese Corporation of America has started construction of a new polyol production unit at its Chemcel Plant in Bishop, Tex.

R. W. KixMiller, Vice President and General Manager of Celanese Chemical Division, in announcing construction of the new facility, reports that it will utilize special aldoling processes developed by Celanese and will greatly expand capacity for polyol and aldol production which began a year ago with the start-up of a semi-works unit.

The new commercial unit is expected to be completed and producing by the last quarter of 1957. In addition to providing trimethylolpropane and other intermediates for polyurethane synthesis, this new unit will produce a range of other products that will serve end uses in alkyd resins, high quality brake fluids and other expanding industrial fields.

NEWS

ACS Gives First Award In Synthetic Chemistry

The first winner of the $1,000 American Chemical Society Award for Creative Work in Synthetic Organic Chemistry is Professor Robert B. Woodward of Harvard University, it was announced in Atlantic City, N. J., during the Society's 130th national meeting.

The new award is sponsored by the Synthetic Organic Chemical Manufacturers Association. The prize will be presented to Dr. Woodward at the Society's next national meeting in Miami, Fla., in April, 1957.

Dr. Woodward, one of the nation's foremost organic chemists, has had a leading part in the synthesis of nature's most complicated substances, including quinine, cortisone and reserpine. Other high honors earned by his chemical prowess are the William H. Nichols Medal of the ACS New York Section, the Baekeland Award of the Society's North Jersey Section, and the George Ledlie Prize—a $1,000 biennial award given to a Harvard researcher who has made valuable contributions to the welfare of mankind.

The ACS Award for Creative Work in Synthetic Organic Chemistry was established last January by its sponsoring group. According to the rules of eligibility, it is to be presented annually "for creative work in synthetic organic chemistry published in an American journal during the preceding three years ending January 1 of the year in which the selection is made."

•

3rd Plant For Columbian

Columbian Carbon Co., New York, N. Y., has opened its third plant for manufacturing colloidal dispersions of carbon black. The new plant is located in Tacony (Philadelphia), Pa. Its output will supplement that of plants of Easton, Pa., and Toronto, Canada.

Columbian is the world's largest manufacturer of carbon black dispersion's exclusively. These dispersions of carbon black are used by makers of paints, lacquers, plastics, leather, cement and paper.

CONVENTION REPORT

(*From page 48*)

with high impact resistance.

Chlorinated rubber dissolved in various drying vegetable oils and the ensuing solution exhibiting a degree of solubility in mineral spirits.

Formulation Techniques

Styrene coatings with improved adhesion.

Primers for vinyl dispersion coatings.

Shingle and shake paints.

Additives

Nonionic thickener for latex paints.

Low temperature coalescing aids for PVAc paints.

Modified vegetable oil for styrene-butadiene emulsion paints.

Emulsifier of non-ionic-anionic type for PVAc, acrylic, and styrene-butadiene emulsion paints.

Phenol Modified Coumarone-Indene resin for controlling gelling and skinning in tung oil-phenolic varnishes.

Equipment

Pilot plant equipment for cooking varnishes and alkyd manufacture.

Sieving machine which is said to eliminate screen blinding and is easier and faster to clean.

NEWS

David H. Litter Honored

David H. Litter of the D. H. Litter Company, Inc., was honored by his friends and colleagues in the Paint and Chemical Industry at the industry's annual dinner in behalf of Joint Defense Appeal, on October 3 at the Hotel Warwick in New York.

D. H. Litter

Robert I. Wishnick, chairman of the board of the Witco Chemical Co., presented an award expressing the industry's appreciation and respect for Mr. Litter's "steadfast devotion" to interfaith and community relations work.

Among his numerous civic and philanthropic endeavors, Mr. Litter is a member of the National Commission and co-chairman of the National Program Committee of the Anti-Defamation League of B'nai B'rith, a constituent agency of the JDA.

Appoint Diamonite Agent

The O. Hammel Company has been appointed distributor for the Diamonite Products Division of the United States Ceramic Tile Company of Canton, Ohio, according to James F. McCrory, Manager of Chemical and Equipment Sales for O. Hammel. As a result, Mr. McCrory says that his company can now offer to the ceramic, chemical, and pharmaceutical industries the latest development in grinding media.

Diamonite is a synthetic sapphire substance in bond, being composed of fine-grained crystals of high-purity aluminum oxide, held together by a non-metallic vitreous bond. The substance, in the shape of rods, is used in mills for grinding ceramic materials, glazes, enamels, paints, pigments, and pharmaceuticals. Its hardness approaches that of diamonds, thus reducing the possibility that contamination might occur during the grinding process.

NEWS

National Aniline Cuts Price on Isocyanates

National Aniline Division, Allied Chemical & Dye Corp., has announced a 50 per cent reduction on Nacconate 300 (MDI diisocyanate) from $3.50 per pound to $1.75 per pound. A similar price reduction applies to Nacconate 300 when furnished as a 50 per cent solution in o-dichlorbenzene for which the price will now be $1 per pound.

Current price reductions on Nacconate 300 follow closely upon recent announcements by National Aniline Division of a price reduction to 95 cents per pound on Nacconate 80 in truck load quantities. Nacconate 80 is now being widely used in the manufacture of urethane foams.

Both Nacconate 80 and Nacconate 300 are presently being supplied from interim facilities at National's Buffalo, N. Y. plant. However, the Company is now completing a multi-million dollar plant for the production of Nacconates at Moundsville, W. Va. which is expected to make a major contribution to the growth of urethane in flexible and rigid foams, coatings, adhesives and elastomers.

L. P. Robinson Retires As ADM Vice President

Retirement of L. P. Robinson, vice president since 1950 of Archer-Daniels-Midland Company's Foundry Products Division at Cleveland, has been announced by Thomas L. Daniels, ADM president. Mr. Robinson will be succeeded by Warner B. Bishop, Jr. of Cleveland, who was elected a vice president of Archer-Daniels-Midland in September.

Robust at 70 years of age, Mr. Robinson is ending a career which he began as a brakeman on the CB & Q Railroad. Successively, thereafter, he worked as a salesman for the National Carpet Sweeper Co. and for the Florida Everglade Land and Sales Co. In 1917 he entered the foundry business and in 1929 he became director of core oil sales for ADM.

Mr. Robinson is a former president of the northeastern chapter of American Foundry Society, which he helped organize, and a past national director of the organization. In 1954, AFS awarded him an honorary life membership.

Mr. Bishop, who succeeds Mr. Robinson, joined ADM in 1945 after spending three and one-half years in the U. S. Naval Reserve. He has subsequently served as manager of exports, assistant sales manager, and sales manager, and was elected assistant vice president in 1955.

•

Sherwin-Williams Expands

Two new overseas licensees of The Sherwin-Williams Co., world's largest paint firm, have begun paintmaking operations in Colombia and Spain. Announcement of the opening of these plants was made by Arthur W. Steudel, company president.

Sherwin-Williams de Colombia, S. A., has undertaken manufacturing on a small scale in Bogota. This fall, however, the firm will complete a $500,000 installation at Fontibon, a new industrial section in the South American country.

In Barcelona, Spain, Sherwin-Williams Espanola, S. A., has begun operations in a new $1 million plant, located in an industrial area bordering on the Mediterranean.

NEWS

Sherwin-Williams Opens Associated Products Lab

Establishment of a new Sherwin-Williams research group to develop non-paint products associated with the paint industry has been announced by A. B. Holton, technical director of the paint firm. The new development staff will be headed by Dr. Richard Hall and will headquarter in the company's technical service department in Cleveland, Ohio.

Dr. Hall has been associated with Sherwin-Williams since 1954. He headed the firm's analytical research department at Chicago prior to his present appointment.

Before joining Sherwin-Williams, Dr. Hall had been an associate professor of inorganic chemistry at the University of Miami (Fla.) and was for several years identified with the vehicle development laboratory of Pittsburgh Plate Glass Co. at Milwaukee. He is the author of scientific papers on titanium compounds and of several chemical laboratory manuals.

Succeeding Dr. Hall as head of the analytical research laboratory is Dr. Claude A. Lucchesi. Dr. Lucchesi was associated with the Shell Development Co., Houston, before joining Sherwin-Williams earlier this year. In the course of his career, he has done extensive work in x-ray fluoresence, spectrography, boron chemistry and instrumental analysis.

•

New Shawinigan Office

To provide more intensive coverage of the Southeastern United States, Shawinigan Resins Corp. has established a Southern District Sales Office in Atlanta, Ga.

Activities of the Atlanta office, which is located at 1401 Peachtree St., N.E., will be directed by W. F. Hill, the newly appointed assistant district manager.

Mr. Hill, formerly a sales representative with Monsanto Chemical Company's Plastics Division in the Southern district, joined Shawinigan only recently.

Reichhold Enters Into Petrochemicals Field

Entry into the field of basic petrochemicals by Reichhold Chemicals, Inc. through long term contracts with Escambia Chemical Corp. has been announced by Henry H. Reichhold, RCI president. Mr. Reichhold described the step as another in RCI's long range vertical integration program aimed at producing supplies of basic chemicals and plastics for RCI's customers in the U. S. and throughout the free world.

RCI is already one of the world's leading producers of chemicals and synthetic resins, including phenol, formaldehyde, glycerine, and polyesters, protein adhesives and chemical color pigments. The Escambia Chemical Corp., jointly owned by Electric Bond and Share, United Gas Corp. and National Research Corp., is presently producing ammonia, nitric acid, and ammonium nitrate near Pensacola, Fla.

Plans are under way for Escambia to begin the manufacture of polyvinyl chloride resin early in 1957. In addition, construction of a plant for producing methanol will be started by 1958.

•

Olympic Buys Subsidiary

Purchase of Irwin Paint Co. at Berkeley, Calif., was consummated early in September by Olympic Paint & Varnish Company of California, according to joint announcement by J. W. Harryman and A. F. Sterbenz, President and Vice President respectively of Olympic.

The Berkeley factory will be operated as a wholly owned Olympic subsidiary, under the direction of Jack B. Heymes as General Manager. Mr. Heymes assumes his position with many years of paint and varnish manufacturing to his credit, having formerly been associated with California Ink Co., Pacific Paint & Varnish Co., General Paint Corp. and others on the west coast.

General offices for the joint operation will be maintained at Olympic's Los Angeles headquarters. In addition, inasmuch as Olympic was recently incorporated, Olympic's corporate officers will also head the Irwin Company.

abstracts

Transformation of Drying Oils During Polymerization

by N. S. Tchervinskaia: J. of Prikl Khim. (Russia). vol. 27, No. 12, pp. 1,307-1,312.

It has been found that the thermal polymerization of drying oils is always preceded by an isomerization of the fatty acids, entering into the composition of the glycerides so that there is no essential difference between the chemical properties of oils of the same viscosity, obtained by isomerization and thermal polymerization.

The comparison of the physico-chemico properties of the isomerized oils and of the polymerized oils shows that the procedure of isomerization, recommended in the technique, does not give the improvement of properties by comparison with the thermal polymerization. On the contrary, the speed of drying of the oils is strongly increased by re-esterification by pentaerythrite which substitutes the glycerol.

Polyvinyl Acetate Emulsion Paints

by F. Pfister: Schweiz. Archiv. angew. Wiss. und Tecknik (Switzerland), vol. 20, No. 12 pp. 379-381.

The emulsion finishes based on polyvinyl acetate are the emulsion type "water in oil" in which the polymerized resin as the filming agent, is dispersed in water in the form of fine droplets. Such a dispersion can be diluted by water. The paints based on polyvinyl acetate offer very interesting properties and have a wide field of application. For the manufacture of these paints it is necessary to use the better type pigments which resist lime and which have a high covering power. The mill-ground paints are of a superior quality to those manufactured by simple roll-milling.

A washable emulsion paint contains about 1 part of filming agent and 3 parts of white pigment while a quality for exterior use resistant to weathering should be filmed in the ratio of about 1:1. The rule which states that a strongly filmed paint has a greater coverage, retains all its value in this case. Normal painting with an emulsion paint base comprises a primer coating and two finishing coats. The preparation of the receptive surface is important. Lime and cement surfaces should be dry at the moment of application. In the majority of cases, an isolation with a priming oil, a lean paint or a diluted filming agent is indispensable. On iron and steel surfaces, it is necessary to apply an anti-rust coating which gives a matt surface. Non-ferrous metal surfaces can be covered directly with an emulsion paint which is strongly filmed. An important field of application of dispersion paints is that of goods wagons and trucks.

Exterior Behavior of PVAc Paints

by A. C. Fletcher: Pitturi e Vernici (Italy), vol. 10 No. 12, pp. 771-774.

The author reviews the different phenomena of degradation which can be produced in the polyvinyl acetate dispersion paints in exterior use; for each of the phenomena discussed the causes of the defects and the remedies are given. The different types of degradation are: continuous erosion under the action of atmospheric agents; general loss of adhesion; formation of crevices and fissures; appearance, in the paint

film of small cavities which can contain liquid or air (vesiculation); variations of color tint and decoloration; variation of the aspect and of the structure of the paint films.

The majority of the faults indicated can be prevented by an appropriate choice of pigments and fillers employed, by a homogeneous distribution of the resin around the pigment particles, by an adequate preparation of the surface destined to receive the paint, etc.

Fatty Acids of Distilled Dehydrated Castor Oil

by R. Rowe: Paint Technology (England), vol. 19, No. 210, pp. 79-84.

After describing the methods of dehydration and the material utilized, the author indicates the method to employ to obtain the determination of the iodine index. The fatty acids extracted from the dehydrated castor oil present the advantage of drying without yellowing. Dehydrated castor oil has been employed with success in the manufacture of the alkyd resins and of the epoxy resins as well as for the preparation of polyvinylic esters.

Blown Linseed Oil

by F. Wilborn and J. Morgner: Fette und Seifen (Germany), vol. 57, No. 3, pp. 178-181 (1955).

The author determined the principal characteristics of blown linseed oil at different temperatures, and represented by curves the results of his observations during the course of the blowing, on the decrease of the iodine index, the increase of the viscosity, the density, the refractive index and the saponification index, the variations of the indices of peroxide, acid and hydroxyl. He studied the drying duration in the presence and in the absence of resinate of cobalt and deduced the following practical conclusions:

To obtain rapid drying coatings of paints, it is necessary to blow at as low a temperature as possible, without catalyst. The oils destined to be mixed with resins should not be heated. It is not necessary to preserve them for a long time in store, but to utilize them rapidly. If they must be mixed with polar filming materials, one proceeds to blow with the addition of cobalt driers.

Interesterification of Semi-Drying Oils and Drying Oils

R. Rigamonti and C. Lidia: Olearia (Rome), vol. 9 No. 1-2, pp. 5-12 (1955).

The Eckey method of interestification at low temperature, with simultaneous crystallization of the tri-glycerides was applied to raisin seed and to linseed oils with a view to increasing the iodine index and consequently, the drying characteristics. It was observed that not only sodium methylate but also an alcoholic or aqueous solution (50%) of sodium carbonate, can act very well as catalyst. It was also observed that at the end of about 10 hours, the interestification reaction ceases because there is obtained equilibrium in the statistical distribution of the different fatty acids in the molecule of the tri-glycerides.

The best results, as regards the increase of the iodine index, and of the drying characteristics, were obtained by maintaining the oil for three days at progressively decreasing temperatures and by adding each day a little catalyst. Under these conditions, one can cause the iodine index of the raisin seed oil to pass from 138 to 159 and that of linseed oil from 168 to 184 and reduce by about 15% to 18% the time necessary for the drying.

Styrenated Oils And Resins

P. Slansky: Paint Manufacture (England), vol. 25, No. 2. pp. 54-58 (1955).

In the last decade, the styrene copolymers have acquired a certain industrial importance as competitors of the olio-resinous paints. They are distinguished by the following qualities:

Time of drying, approaching in certain cases that of the cellulose lacquers; low acidity; pale color and good stability of coloration; good resistance to alkalies and to water; no tendency to film disintegration; good adherence; good durability to exterior influences; good electrical properties; good brushing properties.

Moreover the manufacture of the

styrene co-polymers requires neither stainless steel vessels nor high temperatures and the equipment necessary is relatively simple. Only linseed oil blown at a low temperature and with a relatively low viscosity furnishes clear and homogeneous products by reaction with styrene.

PE In Oils and Resins For Protective Coatings

by F. Schlenker, Fette und Seifen (Germany), vol. 57, No. 2, pp. 87-90 (1955).

The influence which is exercised by the size of the molecule, the structural ratios, the isomery and the possibilities of formation of lattices on the physical and chemical properties of a resin is known. These factors do not only act on the physical properties and the solubility, but on the filming power, swelling, adherence, the surface properties, elasticity, wetting power and resistance to water as well. This is the reason why the principal part of the study of the esters of resins and of oils and that of the formation of alkyd resins are consecrated to the type and nature of the polyalcohol in the molecule. It confirms the well-established rule that the drying properties under equal conditions, are all the better the greater the number of acid radicals in the molecule.

The possibilities of upper polyalcohols were studied as bases of synthetic polyesters and in particular with this study, pentaerythrite as the more qualified representant of this group. After examination of the formation of esters of resins and oils and of the alkyd resins with pentaerythrite, the properties of these raw materials were studied and their advantages were instanced over analagous products obtained from other polyols.

Modified Casein for Stabilizing Latex Emulsion Paints

by G. Genin: Le Lait (France), vol. 35, No. 341-342, pp. 29-36 (1955).

The polyvalent ions present in a latex paint can result in the destruction of its stability. These ions can originate from the charge materials utilized in the preparation of the paint or exist in the state of impurities. The latex can be completely coagulated by these cations. The proteins normally react on these latter, causing an increase of the viscosity of the paint and a precipitation of the protein. This phenomenon, occurring in a ready-for-use paint, can render it progressively unusable.

Among the polyvalent ions, the calcium ions are the more frequent. The author sought to find if an appropriate modification of the protein would be susceptible of reducing its sensitivity to the action of the cations, to that of calcium in particular. The results of this study established that the proteins, modified by enzymatic treatment, whether it was a question of milk casein or soya casein, communicated an excellent stability to the paints, both at ordinary temperature and after successive coolings and reheatings, even if in the preparation of these paints there were used pigments with a high content of calcium salts.

Vinyl Paint Emulsions

by G. Bondy: Paint Manufacture (England), vol. 25, No. 3, pp. 109-110. (1955).

The preparation of the vinylic emulsion paints poses numerous problems to manufacturers, who have to make a compromise to maintain a precise equilibrium of the desired properties: resistance to water, adherence and stability of the emulsion on the one hand; brilliancy, easy formation of the film, instability on the other hand. In addition, the incorporation of plasticizers, the dispersion of the pigments, stability to storage, protection against fungicides are not always resolved according to the ideal hoped for.

Freeze-Thaw Stability of PVAc Emulsion Paints

by A. Fletcher and J. E. Mayne: Paint Manufacture (England), vol.. 25, No. 3.

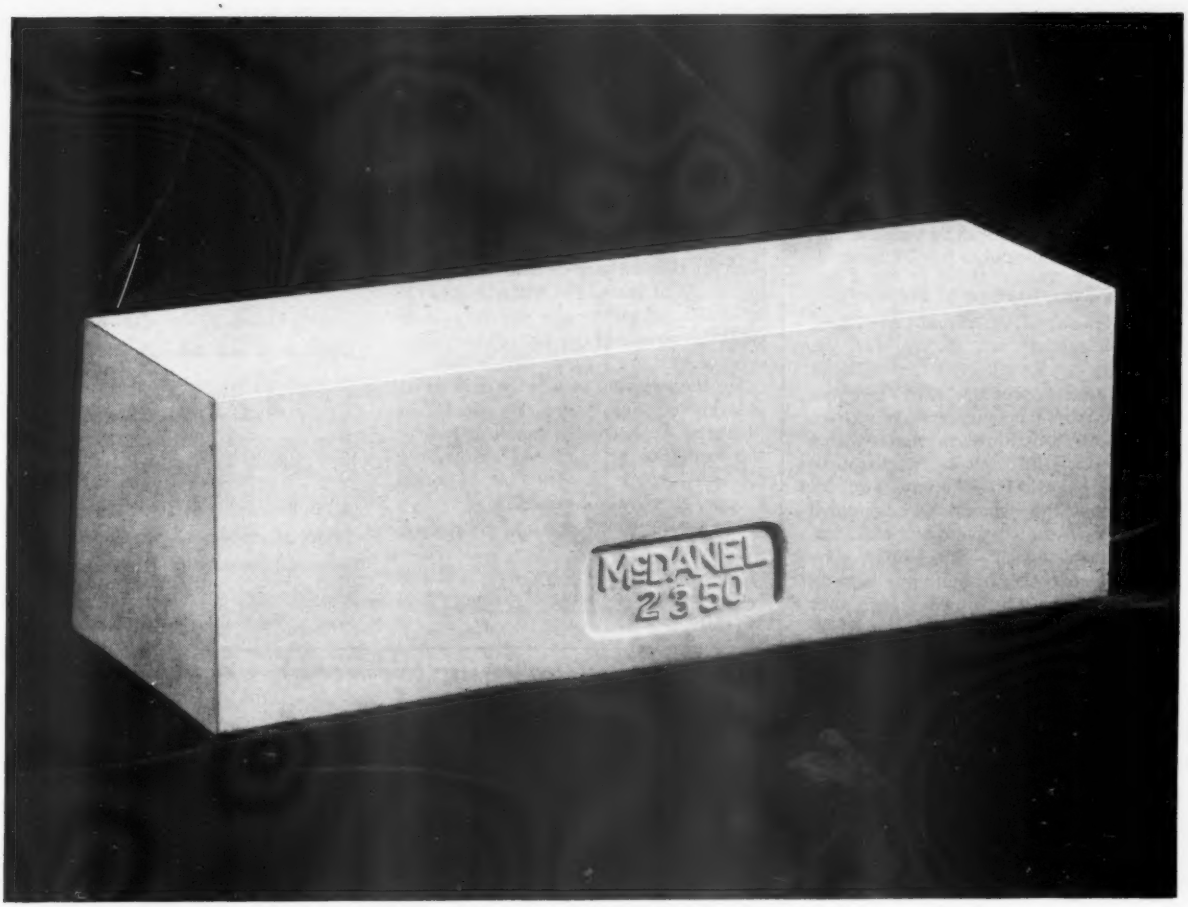
The action of cold on the polyvinyl acetate emulsion paints is translated into the flocculation and coalescence of the particles of polymers, and of pigments, as a consequence of a non-uniform distribution of the emulsifying and stabilizing agents. In studying, moreover, the role of the dimension of the particles and of the molecular weight of the polymer, of the proportion and type of the plasticizer, of the type of dispersing agent, one arrives at the formulation of emulsion paints stable to frost and thaw without the addition of special agents, which in reality, have only little effect.

Primer for Aluminum

by G. Luft and P. Debove: Lack und Farben Chemie, vol. 9, No. 2, pp. 33-42, (1955).

With a view to precisely ascertaining the behavior to corrosion of painted aluminum, as a function of the content of heavy metals present in the paints, either as components or as impurities, systematic corrosion tests were conducted of varnished test parts with products of different composition. The following findings were made with these tests:

The presence of lead and copper in paints used as primer coatings causes phenomena of galvanic corrosion, whose importance depends on the proportion of these electro-positive elements, on the nature of the aluminum alloy being painted and on the state of thermal or mechanical sensitization of the paint. The present research served to confirm



McDANEL SUPER HIGH DENSITY MILL LININGS with a specially-developed body give more production at less cost!

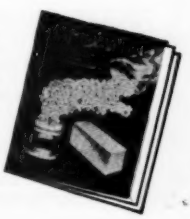
● The first thing you notice about McDanel Super High Density Mill Lining Brick is its pure whiteness, its smoothness. During installation it's easy to work with. Special shapes fit quickly and easily around mill doors. Mill ends fit tighter, neater.

● When grinding begins you know you've got a superior mill lining, because McDanel Lining Brick is made from a special, scientifically developed body under constant manufacturing control. Lasts up to three times longer with big savings in costs and less down time.

McDANEL Industrial CERAMICS

McDANEL
REFRACTORY PORCELAIN COMPANY
BEAVER FALLS · PENNSYLVANIA

Send for Bulletin B1-56 with the latest information on McDanel Mill Lining Brick and Grinding Balls. Do it now!



that to obtain an adequate protection of the aluminum alloys destined to operate in particularly aggressive environments (sea water), it is necessary to reduce to the minimum the content of lead in the pigments of these paints; this content must be lower than 0.2% and the copper should be practically absent, if complete corrosion protection of the light alloys of the type aluminum-copper magnesium is to be obtained.

Optical Examination of Pigments

by M. Arnold: J. of Oil and Color Chem. Assoc. (England), vol. 37, No. 411, pp. 508-512.

A pigment presents two essential characteristics: opacity and coloration. They both contribute to the covering power of a paint but by mechanisms which are entirely different, and for this reason they should be considered separately for a satisfactory evaluation.

A veritable opacity is accompanied by a certain reflection of light. It is without any relation to the covering power and the knowledge of one of these qualities cannot give rise to assumptions of the other. Despite its prime importance, the measurement of the opacity has been little developed in paint technical circles. A simple method is described to determine the opacity of a pigment, apart from considerations of color.

Aluminum Alcoxides in Synthetic Resins

Chemie des Peintures, vol. 18, No. 4, pp. 109-116 (1955).

The aluminum alcoxides can from another aspect be designated as the esters of aluminic acid. They are formed by reaction of an alcohol with aluminum metal. It is necessary to achieve this reaction, to activate very slightly the surface of the aluminum by means of traces of mercuric chloride or iodide added to the alcohol, or to treat the surface of the aluminum with a drop of mercury.

By the addition of a fatty acid to an alcoxide of aluminium, the alcohol is liberated at normal temperature with the formation of soaps still containing alcoxide groups. With the hydroxyl groups, there are obtained, at ordinary temperature, complexes and an acolosis on heating.

The author indicates the probable formulas corresponding to these various operations.

CLASSIFIED ADVERTISEMENTS

Rates: $.20 per word, except those seeking employment, for which rate is $.10 per word. Minimum: ten words. Address all replies to Box Number, c/o Paint and Varnish Production, 855 Avenue of the Americas, New York 1, New York.

OPPORTUNITY FOR CHEMIST

Industrial coatings chemist, qualified in formulation and development of wood or metal finishes. Salary open. Southern California division of well known national industrial coatings firm. Give full qualifications, education and employment record. State salary expected. Box 1111.

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1933, AND JULY 2, 1946 (Title 39, United States Code, Section 233) showing the Ownership, Management, and Circulation of PAINT AND VARNISH PRODUCTION, published monthly at Easton, Pa., for October 1, 1956.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:
Publisher: John Powell, 855 Avenue of the Americas, New York City.
Editor: Anthony Errico, 855 Avenue of the Americas, New York City.
Managing editor: None
Business manager: None

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.) Powell Magazines, Inc., 855 Avenue of the Americas, New York City.
John Powell, 855 Avenue of the Americas, New York City.
Ira P. MacNair, 254 W. 31st Street, New York City.
Alice L. Lynch, 855 Avenue of the Americas, New York City.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only).

JOHN POWELL, publisher

Sworn to and subscribed before me this 28th day of September, 1956
(SEAL)

Daniel D. Randall.
Notary Public, State of New York
No. 03-8491000
Qualified in Bronx County
Certs. filed with Bronx and New York
County Clerks and Registers
(My commission expires March 30, 1958)

NEWS

First ACS Grady Award Goes to Former Colleague

David H. Killeffer of Crestwood, N. Y., writer, publicist and for more than 30 years a leader in the interpretation of chemical progress to the layman, has won the first James T. Grady Medal, given by the American Chemical Society for distinguished reporting of chemistry, chemical engineering and related fields.

Announcement of the award was made by Dr. J. C. Warner, ACS president, at a banquet of the Society, during its national meeting held in Atlantic City, N. J.

The Grady Award was established by the ACS last year in memory of the late Mr. Grady, who, as managing editor of the Society's News Service for a quarter century, made a significant contribution to the development of science reporting for the public.

Mr. Killeffer, a chemical engineer, has written many magazine articles on chemical subjects, and also is author of several books in the field. As a member of the ACS editorial staff, he was once a colleague of the late Mr. Grady.

•

Standard Can Expands

Standard Can Corp. of Pittsburgh, a subsidiary of United States Hoffman Machinery Corp., has leased 200,000 square feet in the Buncher Industrial District of Pittsburgh for the purpose of expanding operations into the houseware field. Joint announcement of this was made by Irving Fein, President of Standard Can Corp. and Vice President of U. S. Hoffman, and Hyman Marcus, Chairman and President of U. S. Hoffman.

Mr. Fein stated that the new facility marks the first step in a program designed to triple Pittsburgh operations during the next couple of years. His company, which for many years has specialized in the production of industrial containers, will now produce a full line of steel based household items.

CALENDAR OF EVENTS

Nov. 7-9. Retail Paint & Wallpaper Distributors of America Convention, Hotel Sherman, Chicago.

Nov. 12-14. 68th Convention of National Paint, Varnish and Lacquer Assoc., Statler Hotel, Los Angeles, Calif.

Nov. 27-30. Nat'l. Chemical Exposition, Cleveland Auditorium, Cleveland, Ohio.

Production Club Meetings

Baltimore, 2nd Friday, Park Plaza Hotel.

Chicago, 1st Monday, Furniture Mart.

C.D.I.C., 2nd Monday.
Cincinnati — Oct., Dec., Mar., May, Hotel Alms.
Dayton — Nov., Feb., April, Suttmilers.
Indianapolis — Sept., Claypoll Hotel.
Columbus — Jan., June, Fort Haynes Hotel.

Cleveland, 3rd Friday, Harvey Restaurant.

Dallas, 1st Thursday after 2nd Monday, Melrose Hotel.

Detroit, 4th Tuesday, Rachham Building.

Golden Gate, 3rd Monday, E. Jardin Restaurant, San Francisco.

Houston, 2nd Tuesday, Bill Williams Restaurant.

Kansas City, 2nd Thursday, Pickwick Hotel.

Los Angeles, 2nd Wednesday, Scully's Cafe.

Louisville, 3rd Wednesday, Seelbach Hotel.

New England, 3rd Thursday, University Club, Boston.

New York, 1st Thursday, Brass Rail, 100 Park Ave.

Northwestern, 1st Friday, St. Paul Town and Country Club.

Pacific Northwest, Annual Meetings Only.

Philadelphia, 3rd Wednesday, Philadelphia Rifle Club.

Pittsburgh, 1st Monday, Gateway Plaza, Bldg. 2.

Rocky Mountain, 2nd Wednesday.

St. Louis, 3rd Tuesday, Kings-Way Hotel.

Southern, Annual Meetings Only.

Toronto, 3rd Monday, Oak Room, Union Station.

Western New York, 1st Monday 40-8 Club, Buffalo.

TECHNICAL Bulletins

GLYCERINE

Two complementary booklets on glycerine have been published by the Glycerine Producers' Association, Dept. PVP, 295 Madison Ave., New York 17, N. Y.

One booklet, titled "Glycerine—Terms, Tests, Technical Data," describes the commercial grades of glycerine and gives specifications, test methods, and shipping and storage requirements of the product.

The second booklet, titled "Glycerine—Properties and Uses," specifies glycerine's physical properties and discusses the principal industrial uses for it.

ANALYTICAL INSTRUMENTS

A battery of analytical instruments, combining the principles of fractional distillation and vapor-phase chromatography, are described in a brochure newly issued by Podbielniak, Inc., Dept. PVP, 341 E. Ohio St., Chicago, Ill.

The Podbielniak instruments find use in the separation and analysis of any gaseous or vaporizable liquid mixture. Among the instruments pictured and described are the Thermocon, for low-temperature distillation analysis, the Hyper-Cal, for high-temperature distillation, and several series of Chromacon analytical machines.

For each of the machines, an outline appears in the brochure regarding the operation and application of it. Besides this, there are suggested combinations of Thermocon and Chromacon or Hyper-Cal and Chromacon apparatus for two-way analyses.

BROWN-ALLEN BULLETINS

Revised and up-to-date bulletins covering three products for the paint and varnish industry have been published by Brown-Allen Chemicals, Inc., Dept. PVP, P.O. Box I, Staten Island 2, N. Y.

The bulletins cover L.A.V. #2, a complete vehicle for aluminum paint; Caltrol for viscosity control of limed oil flat paints; and 25-M Oil, a base vehicle for flat paints and for use as a viscosity builder.

INDUSTRIAL RADIOGRAPHY

A new 12-page booklet titled "Norelco X-ray for Industry," containing operating and application data on six different types of radiography units, is available from the North American Philips Company, Inc., Instruments Division, Dept. PVP, 750 S. Fulton Ave., Mount Vernon, N. Y.

The booklet shows photos and characteristics of all instruments listed and explains how they are used. In addition there are three charts. One indicates the proper unit to use for various thicknesses of steel and aluminum. Another shows penetration values of different alloys and metals as compared to steel. The third gives exposure data for steel.

INDUSTRIAL CHEMICALS

Commercial Solvents Corp., Dept. PVP, 260 Madison Ave., New York 16, N. Y., has issued a technical data sheet on industrial chemicals—Alcohols, Amines and Ammonia, Esters, and other chemicals; also its nitroparaffins and derivatives—Nitroparaffins, Alkaterges, Aminohydroxy Compounds, Chloronitroparaffins, Diamines, Hydroxylamine Salts, and Nitroparaffin Compounds. The sheet lists products, chemical formulas, physical properties, and uses.

CERAMIC BRICK

A new price list showing quantities, sizes and prices on high density ceramic mill lining brick for individual mills has been published by LZP Industrial Ceramics Co., national sales representative for Coors Porcelain Co.

Fifty-seven different sized mills are priced with either 1½″ lining brick or 2″ lining brick, with or without lifter bars. Approximate shipping weight is included in each.

Also listed are prices for special door frame and door brick, and Coors prices on individual brick in all standard sizes.

The Bulletin, SML-816, may be obtained from LZP Industrial Ceramics Co., Dept. PVP, 275 Kalamath St., Denver 23, Col.

ACRYLIC EMULSION

Rohm & Haas Co., Dept. PVP, Philadelphia 5, Pa., has issued its Progress Report No. 3 on Rhoplex AC-33, an acrylic emulsion for use in exterior paints.

Throughout the 48-page booklet there are formulations, exposure data and summary reports on the testings of surfaces coated with Rhoplex AC-33 paints. In addition, physical properties of the Rhoplex AC-33 itself are described in detail.

A special section of the booklet discusses Rhoplex AC-33 ingredient paints as they relate in performance among various sections of North America. Southeastern, Northern, Middle-Atlantic and Western areas are included.

HOMOGENIZER-MIXER

A high-speed, high-shear homogenizer-mixer called the Eppenbach Homo-Mixer is described and illustrated in a new eight-page catalog now offered by Gifford-Wood Co.

Four drawings in the catalog illustrate internal construction and operation of various Homo-Mixer models. In addition, 14 photographs show laboratory and production models and such auxiliary equipment as speed control units, vacuum kettles, open kettles and covers.

Copies of the catalog, #402-R-2, are obtainable from Gifford-Wood Co., Dept. PVP, Graybar Building, New York, N. Y.

AEC RESEARCH REPORTS

A new free price list of Atomic Energy Commission unclassified research reports for sale by the Office of Technical Services, U. S. Department of Commerce, is now available from OTS.

This cumulative listing of the more than 3,000 AEC reports in the OTS collection contains 1,034 items acquired since January 1, 1956. To obtain the new list, request AEC Research Reports Price List No. 26 from OTS, U. S. Department of Commerce, Washington 25, D. C.

HANDLING EQUIPMENT

A new 52-page product catalog now available from The Mercury Manufacturing Co., Dept. PVP, 4044 S. Halsted St., Chicago 9, Ill., includes complete specifications and illustrations of the company's entire line of current model fork lift trucks, platform lift trucks, load carrying trucks and industrial tractors and trailers.

The catalog, No. 400, is comprised of three major sections; Fork and Platform Lift Trucks, Gasoline and Electric Tractors and Industrial Trailers and Hand Trucks.

WASH PRIMER RESINS

A new 12-page booklet on the subject of Butvar, polyvinyl butyral, and Formvar, polyvinyl formal, for corrosion resistant wash primers has been prepared by Shawinigan Resins Corp., Dept. PVP, Springfield 2, Mass.

In separate sections, the booklet discusses the properties of Butvar and Formvar resins, preparation of wash primers, suggested formulations, and applications of the primer to metal. Also included are sections on properties of the formulated primer and suggested industrial end-uses.

WATER REPELLENT TREATMENT

Benefits and advantages of silicone-based water repellent treatment for above-grade masonry are described in a new brochure, code #8-301, from Dow Corning Corp., Dept. PVP, Midland, Mich.

Examples of laboratory developmental work are featured in the brochure, along with case-history reviews of field use. In addition application methods are given for brush and various types of sprays.

CELITE SILICA PRODUCTS

Formulations using Celite diatomaceous silica products as pigment extenders, flatting agents, and filter aids for the finishes industry have been compiled in a new 46-page booklet by the Johns-Manville Corp., Dept. PVP, 22 E. 40 St., New York, N. Y.

In all, the booklet contains 41 paint formulas collected from raw material manufacturers all over the country and reprinted with their permission. The formulas include every type of paint finish, so as to provide broad industry coverage.

Besides the listing of formulas, the company booklet explains what Celite is and gives mention of its characteristics and potential capabilities.

The booklet consists of separate ring binder sheets stapled into two color covers. These are removable at the user's discretion.

GRINDING RODS

The Diamonite Products Division of United States Ceramic Tile Co. has prepared a four page folder describing its Diamonite grinding rods.

Diamonite, a synthetic sapphire substance in bond, is used in mills for grinding ceramic materials, glazes, enamels, paints, pigments and pharmaceuticals.

The literature from Diamonite Products discusses properties and performance of the Diamonite and gives specifications of the rods being produced. Folder available from the manufacturer, Dept. PVP, Canton 2, Ohio.

ORGANIC CHEMICALS

More than 335 organic chemicals are described in a new 24-page booklet issued by Carbide and Carbon Chemicals Corp., Dept. PVP, 30 E. 42 St., New York 17, N.Y. The booklet, F-6136, presents condensed data on the applications of each chemical and gives its physical properties in tabular form.

Entitled "Physical Properties of Carbide and Carbon Chemicals," the up-to-date catalog features 21 new products. Sorbic, a fungistat for foods, and Niatex antistatic AG-2 are two of the new products described in the section on chemicals for special applications. For easy reference, other chemicals are arranged by family groups.

ATMOSPHERIC CLEANING

The cleaning of ordinary atmospheric air by means of specially adapted industrial cloth-filter-type dust collectors is treated in a new bulletin published by Wheelabrator Corp., Dept. PVP, 1231 S. Byrkit St., Mishawaka, Ind.

Dealing with the Wheelabrator ultra-filtration process, the bulletin includes two case histories of installations where this process is used for cleaning dust out of ordinary city or country air. In addition, it points out other possible situations for which the air cleaning apparatus may be applicable.

HYDRITE KAOLINITES

Typical uses of Hydrite Kaolinites and their chemical, colloidal and physical properties are outlined in a new five page folder issued by Georgia Kaolin Co., Dept. PVP, 433 N. Broad St., Elizabeth, N. J.

Hydrite Kaolinites, which are processed hydrated aluminum silicates, have application to the paint, ink, plastics, pharmaceutical and petroleum fields, among others.

In this brochure, descriptive details of the kaolinites are supplemented by picture, chart, and graphic illustrations. Printing was done in two colors.

ADVERTISERS' INDEX

Abstracts from Cyanamid Technical Data

BEETLE® Resin 220-8

A Butylated Urea—Formaldehyde Resin solution that offers

High-Speed Curing

Improved Chemical Resistance

Excellent Stability

For resins of this type, BEETLE 220-8 gives you the optimum in curing speed and chemical resistance without sacrificing stability.

It is recommended that BEETLE 220-8 be used with short oil oxidizing REZYL® Resins or short oil non-oxidizing REZYL Resins, the choice depending on the application.

With these alkyd resins, BEETLE 220-8 is most useful in the range of 20% to 40% of the vehicle solids.

Accept no substitutes for BEETLE 220-8. You can get all its quality, performance and advantages at no increase in price.

WRITE FOR the technical data report on BEETLE 220-8, specifying type of application so that we may be of greater assistance.

Offices: Boston • Charlotte • Chicago • Cincinnati • Cleveland • Dallas Detroit • Los Angeles • New York • Oakland • Philadelphia • St. Louis • Seattle
In Canada: North American Cyanamid Limited, Toronto and Montreal

AMERICAN CYANAMID COMPANY
Plastics and Resins Division
34P Rockefeller Plaza, New York 20, New York

☐ Please send me technical data on BEETLE 220-8 for use in

_____ (type of application).

Name_____ Position_____

Company_____

Address_____

CYANAMID

AMERICAN CYANAMID COMPANY
PLASTICS AND RESINS DIVISION
34P Rockefeller Plaza, New York 20, N. Y.

How HYDRITE Kaolinites affect VISCOSITY

in Polyvinyl Acetate Emulsion Paints

HYDRITE Kaolinites help to control viscosity in polyvinyl acetate emulsion paint systems.

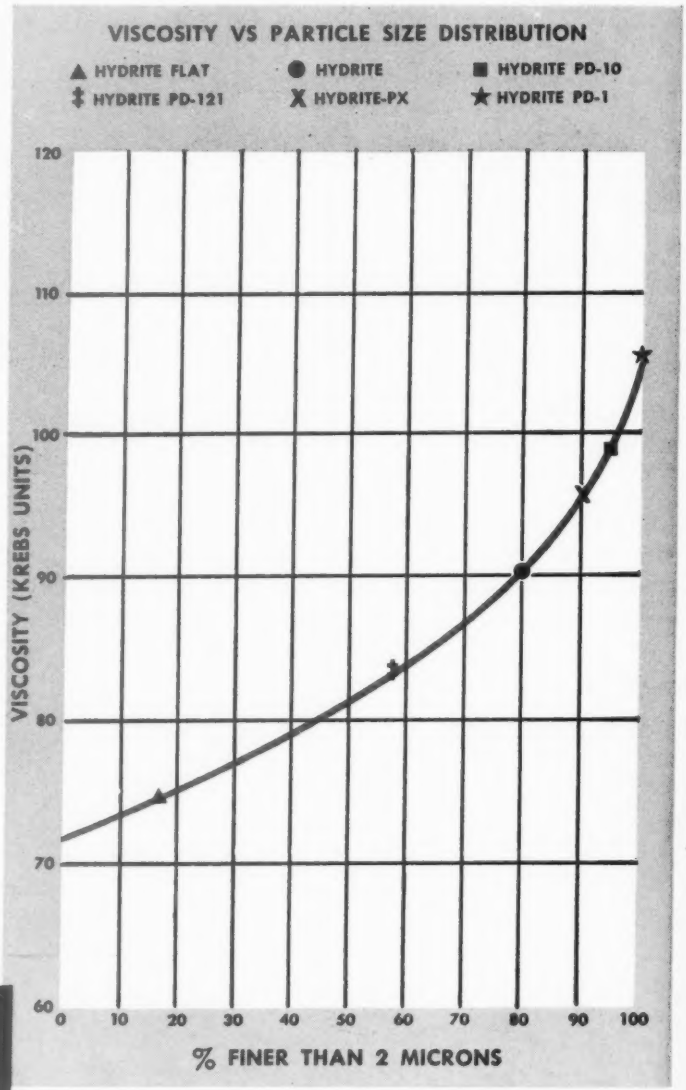
The curve at the right is typical of those obtained when the different grades of **HYDRITE** Kaolinite are used in various **PVAc** formulations. Displacement of this curve along the vertical axis depends on several factors. These include the PVC level, the amount and type of thickener used, the individual **PVAc** emulsion used and the effective water demand of the kaolinite as influenced by the amount and type of dispersing agents used.

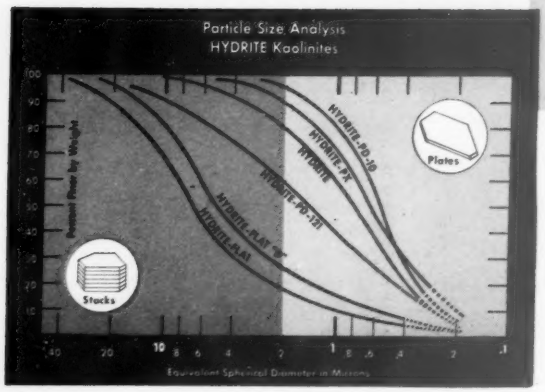
Good viscosity stability was obtained from these formulas. This is undoubtedly due to the inert nature of kaolinite and the fact that it is not subject to chemical or bacteriological degradation. In addition, the body imparted by kaolinite is of a type that promotes good brushing and levelling characteristics.

These are a few of the reasons why **HYDRITE** Kaolinites are being used in increasingly large quantities by manufacturers of PVAc paints.

Technical Service Bulletin TSBH-12 giving futher details is now available.

WRITE FOR YOUR COPY!





 # 7 in a series describing the effect of kaolinite particle size on important properties of various paint systems.

GEORGIA KAOLIN COMPANY

435 North Broad Street, Elizabeth, N. J.